SOMETHING ABOUT *ANYTHING*:
THE SEMANTICS OF *A*, *THE*, *ANY*, AND *CERTAIN*

by

David Fairchild Houghton

26 August 2000

Major advisor: Jean-Pierre Koenig

A dissertation submitted to the

Faculty of the Graduate School of

State University of New York at Buffalo

in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

Linguistics Department

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TABLE OF CONTENTS

ABSTRACT

The aim of this dissertation is to describe the conventional meaning of *a*, *the*, *any*, and *certain*. The former are the (in)definite determiners, the latter, arguably, the (non)specific determiners. I derive the uses of these determiners as implicatures from a very simple conventional meaning: each indicates that the speaker regards a certain set of implications from her utterance as acceptable: those propositions derived by replacing the noun phrase in question with a referent, where the referent has been chosen by a choice function of a certain sort. In the case of definite noun phrases, the speaker would be satisfied by a choice function determined by the preferences of the hearer; in the case of indefinite noun phrases, she would not be satisfied. In the case of *certain* noun phrases, the speaker would be satisfied by a choice function determined by her own preferences; in the case of *any*, she would not be satisfied. With these two binary parameters of variation, whether the hearer or the speaker, whether satisfied or unsatisfied, we may define four choice-functional determiners.

The implicatures which give rise to the acceptable implications are of a special sort: they are conversational implicatures in contexts where the assumption of cooperation has been suspended. Because all that is relevant in these cases is that the speaker is following her own self-interest, I call them rational implicatures.

The primary purpose of this dissertation is to provide the semantics of *a*, *the*, *any*, and *certain.* Its value lies in its success in achieving this goal and in the explanatory devices that must be developed in order to achieve it: choice functions and rational implicature. It is further valuable in that this account explains why languages should contain expressions with meanings such as these.

Structure of this dissertation: chapter 1, choice functions and rational implicatures; chapter 2, referential uses of the (in)definite determiners; chapter 3, non-referential uses of the (in)definite determiners; chapter 4, overview of specificity; chapter

5, *certain*; chapter 6, *any*; chapter 7, an exploration of further applications of choice functions and rational implicature in the analysis of linguistic phenomena.

Chapter 1: Introduction

In this dissertation I will seek to provide a unified semantics for *a*, *the*, *any*, and *certain*. These one may call the non-quantificational determiners, a label I will explain in the next section. In my analysis of these determiners, I will seek to provide a single simple, general conventional meaning for each. The bulk of the analysis will consist of showing how these simple meanings are fleshed out by pragmatics to create the full range of uses of the determiners. The advantages of this analysis are that it unifies the non-quantificational determiners and predicts that there should be just as many as we find; it explains the presuppositions of uniqueness and existence associated with *the* and *certain*; and it demonstrates a mode of analysis, a "choice functional rational implicature" analysis, that potentially has many more applications (§ 7.1). All of this will be explained further in the remainder of this chapter.

1.1 BACKGROUND

Since Montague (1973), there have been two primary ways to view noun phrases, as of type e, referring to individuals, or as of type $\langle\langle e,t\rangle, t\rangle$, referring to sets of properties. The latter interpretation of noun phrases led to development of generalized quantifier theory (Barwise and Cooper, 1981; *inter alia*), which says that expressions such as *each*, *some*, and *several* — in general, determiners — are of type $\langle\langle e,t\rangle, \langle\langle e,t\rangle, t\rangle\rangle$, functions from properties to sets of properties, and that all noun phrases are of type $\langle\langle e,t\rangle, t\rangle$. It was then proposed that all determiners were of this type. All determiners were quantificational.

Geach (1962), however, brought a problematic set of examples to the attention of linguists and philosophers: the so-called donkey sentences.

(1) Every farmer who owns a donkey$_i$ beats it$_i$.

Eventually proponents of Montague's analysis had to recognize that it was difficult to represent these in predicate calculus formulas given the then standard interpretations of various parts of these sentences: indefinite noun phrases as existential quantifiers and pronouns as variables. (1) is not representable as (2).

(2) $(\forall x\text{: farmer})((\exists y\text{: donkey})(x \text{ owns } y) \rightarrow (x \text{ beats } y))$

The higher-order logic of generalized quantifier theory offered no improvement. Lewis (1979) proposed that the indefinite noun phrases be interpreted non-quantificationally. The elegant symmetry of Barwise & Cooper was broken and non-quantificational noun phrases were the wedge in the crack. Many accounts of donkey anaphora have since been devised (e.g., Kamp, 1981; Heim, 1982, 1983, 1990; Groenendijk & Stokhof, 1991; Diesing, 1992; Chierchia, 1995; *inter alia*), but the common thread in all modern treatments of these phenomena is that (in)definite noun phrases may be non-quantificational.

Largely independent of these theoretical developments are two other strands of research into the semantics of (in)definite noun phrases: the study of specificity and the study of genericity. The former further differentiates (in)definite noun phrases from quantificational ones. Compare (3), which can have the predicate calculus translation (4), with (3), which contains the quantificational determiner *several* and has only the translation (4).

(3) a. Everyone thinks that John wants to marry a banker.

b. Everyone thinks that John wants to marry several bankers.

c. Everyone thinks that John wants to marry a certain banker.

(4) a. $(\exists x\text{: banker})(\forall y)(y \text{ think})[(j \text{ want})[(j \text{ marry } x)]])$

b. $(\forall y)(y \text{ think})[(j \text{ want})[(\exists x\text{: banker})(j \text{ marry } x)]])$

c. $(\forall y)(y \text{ think})[(j \text{ want})[(\text{several } x\text{: banker})(j \text{ marry } x)]]$

(4) represents the specific interpretation of (3); the indefinite noun phrase is translated by an existential quantifier with widest scope. There is no interpretation of (3) which gives the translation of *several bankers* a correspondingly wide scope. There is an interpretation of (3) parallel to that of (3) which gives *a banker* narrow scope. This is the non-specific interpretation, represented in (4). The indefinite article has only the specific reading in (3), where the nominal is modified by *certain*. In fact, one can argue that *certain* is also a determiner. Just as *a* is a determiner of indefiniteness, *certain* is a determiner of specificity.

Generic noun phrases further differentiate the (in)definite determiners from existential quantifiers. The indefinite noun phrase in the generic sentence (5) cannot be translated with an existential quantifier. A better translation uses the universal quantifier (6). The determiner *some*, on the other hand, is translated with an existential quantifier, (5).

(5) a. A cat likes naps.

b. Some cat likes naps.

(6) a. $(\forall x\text{: cat})(x \text{ likes naps})$

b. $(\exists x\text{: cat})(x \text{ likes naps})$

Finally, there is a fourth strand of research, formerly independent of the other three but increasingly dependent of late: the study of the determiner *any*. Most recent

analyses of *any* treat it as a variety of indefinite determiner with special properties. These properties give it a polarity-sensitive usage not had by the indefinite determiner.

(7) a.*I saw anyone.

b. I saw a person.

(8) a. I didn't see anyone.

b. I didn't see a person.

Any NPs are felicitous in the scope of negation and certain other operators. Just as the specific indefinite article may be interpreted by a wide-scope existential quantifier, *any* may be interpreted by a narrow-scope existential quantifier. (8) is equivalent to (9) modulo modals and tense.

(9) $\neg(\exists x)(i \text{ see } x)$

To the extent that specificity may be treated as a matter of the relative scoping of an existential quantifier, *any* may be considered a determiner of non-specificity forming a pair with *certain*. *A* and *the* are the (in)definite determiners. Let us say that *Any* and *certain* are the determiners of (non)specificity.

Less commented on although not entirely unobserved is that *any* shares with the indefinite determiner those properties which inspired the postulation of non-quantificational noun phrases in the first place: *any* noun phrases participate in donkey anaphora.

(10) Every farmer who owns any donkey$_i$ at all beats it$_i$.

Any donkey in (10) cannot be interpreted as a universal NP; it is not equivalent to (11).

(11) Every farmer who owns every donkey$_i$ beats them$_i$.

(10) therefore exhibits the same binding problems as (1), the classical instance of donkey anaphora.

To sum up, *A* is paired with *the*: these are the (in)definite determiners. *A* is paired with *certain*: to understand either of these one must come to some understanding of specificity. *Certain* is paired with *any*: these are the (non)specific determiners. *A* is paired with *any*: these are the determiners involved in donkey anaphora. There are further connections among these determiners which I have not mentioned: *the* and *certain* both induce a presupposition of existence for the referent of their NP, for example; *a* and *certain* both behave like an existential quantifier in some contexts, a universal quantifier in others; and *any* and *certain* are both polarity sensitive. In spite of the interrelatedness of all of these strands of research, (in)definiteness, (non)specificity, scope, and quantificationality, it remains the case that they are pursued largely in independence of each other. At best, studies in one strand will acknowledge the existence of the others and the necessity at some date of unifying them all. I do not know of a single study, however, in which this is actually done. The unification of these four strands of research is, in a nutshell, the goal of this dissertation.

To expand upon this goal somewhat, one of the goals of this dissertation is to present a unified account of the non-quantificational determiners. Somewhat ironically, I will have to ignore donkey anaphora in this account, the phenomenon which most clearly argues for the unity of the (in)definite and (non)specific determiners as a natural class. To address donkey anaphora would require me to address so many aspects of language and fields of linguistic literature apart from the four determiners of interest that the project would become truly unmanageable. I intend to show in the course of this dissertation, however, that there are many themes which unify the non-quantificational determiners beyond their participation in donkey anaphora. The second goal of this dissertation is to elaborate the theory of choice functions. This is the technical device with which I will replace the existential quantifier in interpreting the non-quantificational determiners. The

third goal, and I feel theoretically the most important goal, is to present a model wherein pragmatic meaning is primary rather than derivative for certain forms. My semantics of the non-quantificational determiners will contain certain elements of purely pragmatic information from which other nuances of meaning follow by implication from the mutual assumption of rationality on the part of the interlocutors in the speech act. I will call such implications rational implicatures.

The key notions in my account of the non-quantificational determiners are rational implicature and choice functions. I shall argue that the (in)definite and (non)specific determiners introduce restrictions on the choice functions interpreting the nominals to which they are appended, and the variety of uses to which each of the determiners may be put is determined by the rational implicatures which may be derived from its restrictions. I will now define the notions of rational implicature and choice function briefly. I will then describe the structure of the remaining chapters of this dissertation.

1.2 WHAT IS RATIONAL IMPLICATURE?

Let me define my terms. I will say that an expression IMPLIES a particular proposition in a particular context if one may infer the proposition from the use of that expression in that context. The term 'imply' is agnostic as to the means, strength, or validity of the inference. I may at times use other expressions such as 'convey' and 'allow one to infer'. These should be understood as synonymous with 'imply', and whenever I use some term which might be synonymous with 'imply' without defining that term, it should be understood as synonymous with 'imply'. At times I will simply say that expression *e* implies proposition *p*. By this I will mean that the context has little to do with the implying. Sentence *e* ENTAILS proposition *p* if, by the linguistic conventions concerning *e*, *e* cannot be true if *p* is not true. *e* PRESUPPOSES *p* if *e* entails *p* and one or both of two conditions also holds: 1) the contradictory of *e* also implies *p*; 2) to utter *e* is to imply that

one believes *p* already to be mutually known[1]. The first condition defines what is known as semantic presupposition; the second, pragmatic presupposition. Bearing these distinctions in mind will allow us to make sense of seemingly contradictory statements concerning the presuppositional behavior of the four determiners. Entailment and presupposition crucially involve the notion of truth. The truth conditions of a sentence are just its entailments. Entailments are attached to expressions by the conventions of language use. Also attached to expressions by convention are CONVENTIONAL IMPLICATURES, which differ from entailments in that they do not concern truth conditions. A sentence *e* conventionally implicates *p* if *e* cannot be used in any context without implicating *p*, yet if *p* is not true *e* may still be true. Finally, *e* CONVERSATIONALLY IMPLICATES *p*, or cooperatively or by Gricean implicature implicates *p*, if one may deduce *p* from the utterance of *e* and the assumption that the speaker is being cooperative in some sense (see Levinson, 1983). Complex though this classification of inferences may be, there is a novel distinction that I will propose: this is the notion of RATIONAL IMPLICATURE.

I shall begin the explication of 'rational implicature' by defining rationality. In this definition I mean to define only my own use of the term, although I do not believe my use diverges greatly from ordinary use. An individual is rational if, when he prefers the consequences of action *a* to those of other actions he might perform in that circumstance, he chooses to perform *a*. If the individual has reasons to like the consequences of *a* and also reasons to dislike those consequences yet all things considered *a* has the most preferable consequences of any action he might choose to perform in his circumstance, he is rational only if he chooses to perform *a*. If there is another action *b* which also has relatively desirable consequences yet those of *a* are still

[1] 'Mutually' is a technical term opposed to 'jointly'. Two individuals JOINTLY know a proposition p_0 if they both know it. They MUTUALLY know p_0 if they jointly know it, and for every proposition p_{n+1}, $n \geq 0$, representable as 'we jointly know p_n', they jointly know p_{n+1} as well. The notion of mutual knowledge is

more desirable, he is rational only if he chooses to perform *a*. In sum, an individual is rational only if the actions he chooses to perform are entirely determined by a relative ranking of preferability and dispreferability of the consequences he believes follow from the actions he perceives that he may perform in a given circumstance: an individual is rational in my sense if and only if he does whatever he most wants to do.

Excluded from this definition of rationality is any question of how consistently and logically the individual attaches particular consequences to particular actions and particular degrees of preference to particular consequences. These considerations are at least as important as doing what one wants to do in the popular notion of rationality. One supposes that the craziest man as so judged in popular opinion may be doing what he most wants to do; it just isn't what other people would want to do were they in his place. This is a very practical definition of rationality, since we cannot ever know what other people want. It is problematic, however, in that it is an amalgamation of two separate notions: intelligence and constancy of preference. I take intelligence to consist largely in correctly attaching consequences to actions. The more intelligent one is, the better one can do this. Constancy of preference is nothing more than always extracting the same amount of pleasure or displeasure from a particular state of affairs, everything else being equal. The problem with these other dimensions of sanity is that the absence of them does not necessarily make one irrational. An inability to attach consequences to actions by itself is more diagnostic of stupidity than irrationality. Inconstancy in one's preferences is more diagnostic of capriciousness. If one truly fails to do what one wants to do, however, one is simply irrational; there is no more moderate term. Be this as it may, in my discussions of rational implicature I will assume adequate intelligence and constancy of preference as well. By leaving these assumptions implicit I hope to make my arguments easier to follow.

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discussed in Lewis (1969) and Clark & Marshall (1981). For a collection of papers on the topic, see Smith (1982). The relationship of mutual knowledge to (in)definiteness is further discussed in § 2.3 of this thesis.

It is useful to consider rationality, I contend, because it is only an assumption of rationality that allows us to imply anything at all. *Cat* refers to cats. This is a convention of English. When we speak to someone and by all evidence that person knows English we assume she knows this convention. Suppose we know this convention and the others regarding the expressions and constructions present in (12) and we assume that our interlocutor does as well, and that moreover these conventions are mutually known.

(12) My cat is named Mittens.

Are these assumptions sufficient to justify our inference that the speaker's cat is named Mittens? No. Suppose the speaker is so thickheaded that she does not realize that for her cat to be named Mittens she must have a cat — she knows the linguistic conventions involved in (12) but does not recognize their consequences. In this case, we cannot infer that the speaker's cat is named Mittens from (12). Let us assume adequate intelligence on the part of the speaker, therefore. Are our assumptions now sufficient? No. Suppose the speaker capriciously takes a liking to misleading us. Clearly if we believe this is probable, we cannot infer that her cat is named Mittens from (12). Let us assume constant (knowable and known) preferences on the part of the speaker. Are our assumptions sufficient yet? No. Suppose the speaker knows perfectly well what we are likely to infer from (12) and the conditions under which we should infer it; suppose all of her preferences are normal, including a preference not to mislead us or to be taken for a liar; suppose further that she does not have a cat named Mittens; but suppose in addition to all of these things that her actions are not determined by her preferences. In that case we should not infer that her cat was named mittens from (12). This may seem absurd. Things occur contrary to our preferences; others act contrary to our preferences; but surely we ourselves never act contrary to our preferences. But that is just because to do so would be irrational. Obviously for an utterance to convey any non-natural meaning at all the utterer must be rational.

These observations may seem so obvious as to be trivial, but that is only because we have considered one of the simplest cases. Preferences are not assigned to consequences arbitrarily, nor is it always obvious just what consequences a particular action will have, especially when these consequences are partially determined by the actions of others. There is a kind of "compositionality" among preferences. The logic of this composition is called game theory: game theory is the theory of how rational individuals should act. I propose to call the theory of what one may infer from an individual's speech acts under the assumption of rationality the theory of rational implicature.

Before we proceed it is crucial that we make note that *conversational implicature is a variety of rational implicature*. It is rational implicature under the special assumption that the speaker is being cooperative. One of the hallmarks of conversational implicature is calculability: any two forms with the same conventional meaning, entailments and conventional implicatures, should have the same conversational implicatures (modulo manner implicatures). Calculability in conversational implicatures is inherited from rational implicature: the calculation consists of considering what a *rational* and cooperative person must intend to communicate with a given proposition in a given context. Another hallmark of conversational implicature which is *not* inherited from rational implicature is cancelability. It is possible to cancel conversational implicatures because they are based on at least one cancelable premise: that the speaker is being cooperative. If I say yes to the question "Does Fred have two children?", I will have literally told the truth so long as Fred has at least two children. In a context in which the more relevant information is the exact number of Fred's children, I will be taken to have conversationally implicated that Fred has no more than two children. If I say in response to the question, "Yes, he has two. In fact, he has three children altogether," I will be taken to have made a joke which consists in disregarding the assumption of cooperativity in my initial response. Though subclasses of rational implicatures are cancelable, rational

implicatures in general are not because one may not suspend the assumption of rationality; it is necessary for communication of any kind.

Why, one might ask, am I concerning myself with rational implicature? Because I wish to speak of inferences derived from reasonable assumptions regarding the knowledge and desires of interlocutors in a discourse without tying myself to an assumption of cooperativity. My arguments will look like the sorts of arguments one uses to show that particular elements of meaning are conversational implicatures, yet the elements of meaning I will be concerned with will not necessarily be cancelable. Were I to claim I was showing the calculation of conversational implicatures, someone could use this non-cancelability to demonstrate that my position was false. I have suspended the assumption of cooperativity, therefore, and needing a name for this more general class of implicatures one may calculate without this assumption, I have dubbed them rational implicatures.[2] I shall call my style of semantico-pragmatic analysis a rational implicature account. I will seek the simplest possible conventional meaning for an expression such that the nuances of meaning the expression exhibits in use are rational implicatures of this meaning.

1.3 WHAT IS A CHOICE FUNCTION?

This dissertation presents special difficulties in that the analysis it advances is seemingly unlike any of the theoretical frameworks which are already widely accepted in linguistics. It bears some resemblance to and takes much inspiration from Hintikka's game-theoretical semantics, as I will discuss shortly, but the association with these approaches is largely only inspirational. There is one branch of semantic theorizing, however, which could be viewed as a different treatment of the same subject matter, a different treatment

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[2] Rational implicatures are known in game theory as strategic inferences and Prashant Parikh (1990, 1991) has introduced this term into linguistic discussion in his game-theoretical analysis of the resolution of

of the "game of reference". This is the theory of choice functions which has been advanced as a treatment of indefinite determiners (Reinhart, 1997; Winter, 1997; *inter alia*). In this section I will give a brief overview of the theory of choice functions and the problems it has been designed to address and I will elucidate the sense in which the theoretical entities I postulate may be viewed as elaborations of such a theory.

Tanya Reinhart, who has popularized the use of choice functions in semantics, defines them thus,

> A function f is a choice function (CH(f)) if it applies to any non-empty set and yields a member of that set. (Reinhart 1997: 372)

One may use choice functions to give a semantics to a noun phrase such that the operator binding the noun phrase may have wide scope while the restriction of the noun phrase remains *in situ*. This has been used to address certain inadequacies in treatments of indefinite noun phrases using unselective binding à la Heim (1982). Consider (13)–(15), Reinhart's (47), (48), and (66).

(13) If we invite some philosopher, Max will be offended.

(14) *Derivation with unselective binding:*

a. $\exists_i$[if we invite [some philosopher]$_i$ Max will be offended]

b. $\exists x$((philosopher(x) $\wedge$ we invite x) $\rightarrow$ (Max will be offended))

(15) *Choice-function interpretation*:

$\exists f$(CH(f) $\wedge$ (we invite f(philosopher) $\rightarrow$ Max will be offended))

For (13) to be informative, there must be some conditions under which it could be shown to be true and others under which it could be shown to be false. The sentence should be

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ambiguity. I prefer the term 'rational implicature' to 'strategic inference', inasmuch as the former

false if in every situation in which we invite a philosopher Max is not offended. It should be true if there is some situation in which we invite a philosopher and Max is offended. Both (14) and (15) purport to capture these truth conditions, but they are not equally successful. Within the theory of Logical Form Reinhart is criticizing, (14) is equivalent to (14). It has the unfortunate property that it is trivially true if there is anything in the range of ∃ which is not a philosopher. The advantage of (15) is just that the only things in the range of f are philosophers. It is true if there is a way of choosing among philosophers such that if the philosopher chosen is invited, Max will be offended. It is false if there is no such way.

It is obvious from this example that choice functions have certain advantages over unselective binding. Similar advantages can be seen in the analysis of sentences containing universal noun phrases modified by relative clauses and indefinite noun phrases in the scope of downward entailing operators. The only other analysis Reinhart considers is some version of quantifier raising, which she shows to be inadequate, for reasons I will not go into. I do not wish to endorse or oppose this particular choice-functional treatment of these phenomena. I wish only to demonstrate the nature of choice functions and the purpose they may serve in semantics. Choice functions provide an alternative treatment of existential quantification which allows the quantified noun phrase to remain *in situ* as the argument of a predicate.

The theory of choice functions as presented provides only one category of functions, choice functions. Reinhart (1997) also mentions the possible necessity of positing Skolem functions as functional entities which may be in the domain ranged over by existential quantifiers, but she does not pursue this and she does not further subcategorize choice functions in any way. Conceivably, however, one could distinguish different categories of choice functions, and different patterns of usage could correspond

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highlights the association between this sort of inference and cooperative implicatures.

to different principles of choice. A choice function might be determined by a particular individual's preferences, for instance. Imagine a game in which one takes a sentence of the form X Y Z, where Y is a noun phrase, and replaces it with a sentence of the form X c_Y Z, where c_Y is a constant whose referent is some individual in the extension of Y. *Bob saw a dog* could become *Bob saw Fido*, for instance; *Zoe met the man in the grey felt hat* could become *Zoe met Hugo*. The replacements made in this game define a particular choice function. What replacements are made are defined by the preferences of those making the choices; in writing the examples above, it struck my fancy to replace *a dog* in the first sentence with *Fido* and *the man in the grey felt hat* in the second sentence with *Hugo*. We could distinguish certain choice functions therefore by the individuals making the choices, since their preferences determine what choices are made. A choice function determined by the preferences of individual **X** might be represented as $f_{\mathbf{X}}$[3]; in this expression, f is a variable over choice functions and the subscripted **X** indicates that this variable is restricted to range only over those choice functions whose choices are congruent with the preferences of **X**. If **X** is mutually known to **A** and **B**, **A** could say (16) to **B** and communicate something beyond what she could say with (17).

(16) I see a person **X** chooses in the replacement game.

(17) I see a person.

We might represent the semantics of (16) as (18).

(18) (*i* see $f_{\mathbf{X}}$(person))

[3] This notation bears a resemblance to the indexed predicate calculus of Kuroda (1982). The resemblance is accidental and largely superficial, however. Kuroda suggests that predicate, constant, and variable symbols in predicate calculus might carry indices indicating which small world they are to be interpreted relative to. Kuroda suggests in effect a situation-theoretic calculus. True, there is a correspondence between epistemic worlds and individuals holding the beliefs that would characterize them, but the indices I suggest are indices for individuals; those suggested by Kuroda are indices for small worlds, which may but need not be epistemic.

Since the referent of each referring expression in an assertion is the entity the speaker intends to refer to, (17) is effectively equivalent to (19).

(19) (*i* see $f_{\mathbf{S}}$(person))

Consider (20).

(20) I see a person. The person I see happens to be the person **X** would choose in the replacement game.

'$f_{\mathbf{X}}$' indicates that **X** chooses. For (20) we wish to indicate something subtly different: that the speaker would be satisfied with the choice were **X** to choose. I will represent such a choice function as $f_{+\mathbf{X}}$. The restriction +**X** has a notational and notional opposite: –**X**. If the speaker uses a referring expression with the semantics $f_{-\mathbf{X}}$([[N']]), whatever individual she might be referring to with this expression, she does *not* intend to refer to an individual that **X** would choose from the domain of N'. Implicitly, if the speaker uses a referring expression with the semantics $f_{-\mathbf{X}}$([[N']]) she is indicating that she cannot be sure she would be satisfied with **X**'s choice. With a determiner translatable as $f_{\mathbf{X}}$ the speaker indicates what sort of choice function will select a suitable referent for her referring expression; with one translatable as $f_{\pm\mathbf{X}}$ she affirms or denies the suitability of using such a choice function to assign a referent.

Yoad Winter (1997, 1998) has pointed out that Reinhart's choice functional interpretation of indefinite noun phrases runs into difficulty when the nominal in an indefinite noun phrase has no extension. Consider for example (21).

(21) I don't see a green-faced man.

There is nothing wrong with this sentence, but Reinhart's definition of choice function makes no allowance for the possibility that the extension of the nominal is the empty set. Winter solves this problem by redefining Reinhart's choice function as a generalized

quantifier and stipulating the truth value this quantifier assigns to a pair of sets when the first is empty. Winter (1998) seeks to show that this stipulation is independently required if we accept postulated logical universals for natural language determiners with generalized quantifier semantics. Winter's concern will prove to be an advantage of the rational implicature choice functional theory I shall propose: the only determiners in my account that assert the existence of a choice function, *the* and *certain*, both presuppose the non-nullity of the extension of the nominal. That is, both *the* and *certain* presuppose the existence of their referent. In my account, the presuppositions of existence associated with these determiners are derived from the nature of choice functions. The determiners *a* and *any*, on the other hand, will be interpreted by expressions of the form $f_{-\mathbf{X}}$. The restriction –**X** is compatible with there being no choice function, and hence no referent for the expression. I will explain this at length in the next chapter.

I must also say something about the provenance of the idea of choice functions defined by the preferences of an individual in a game. This idea is directly inspired by accounts by Jaakko Hintikka and his co-authors of various aspects of English within the framework of game-theoretical semantics (Hintikka, 1977, 1979, 1980, 1982, 1987, 1995; Hintikka & Saarinen, 1975; Hintikka & Carlson, 1977, 1978; Hintikka & Kulas, 1985a, 1985b; Hintikka & Sandu, 1997; Saarinen, 1979).[4] Game-theoretical semantics is an attempt to represent the meanings of logical and natural language expressions in terms of the rules of a game of verification. This game begins with a sentence to be verified. The players take turns replacing this sentence with another related to it by various rules; these rules always concern how a constituent of a sentence may be replaced with another expression. Other rules govern who may perform a replacement at any stage of the game.

[4] There are numerous other applications of the concepts of game theory within linguistics and the philosophy of language. For instance, Lewis (1969) applies such concepts in the study of tacit conventions, Parikh (1990, 1991) applies them in the study of the resolution of linguistic ambiguity, and Merin (1994) applies them in the study of speech act theory. Hintikka and his colleagues, however, are the only other scholars I know of to have sought to define the semantics of particular expressions in game theoretical terms.

The game continues until no further replacements may be performed, and the rules of the game are so constructed that the end result is an atomic sentence. If the atomic sentence can be embedded in the discourse model accepted by both players, the sentence is true. If it cannot be embedded, it is false. The two players are called Myself and Nature. It is the initial goal of Myself that the sentence be proven true. It is the initial goal of Nature that the sentence be proven false. It is important to state that these are the *initial* goals of the two players, because the game rule for contradictory negation is that the sentence is replaced with its contradictory — i.e., negation is removed — and the goals of the two players are reversed. In any case, the goals of the two players are always opposed: it is a zero-sum game.

Game-theoretical semantics provides simple and elegant interpretations for many natural language expressions. For example, the rule for indefinite noun phrases is that the player whose goal it is to verify the sentence replaces the noun phrase with a constant denoting some individual in the domain of discourse (fitting the restriction imposed by the nominal). The rule for definite noun phrases is essentially the same except that the constant must denote an individual in a certain mutually known set — this forces definite noun phrases to be anaphoric. The rule for universal noun phrases is that the player whose goal it is to *falsify* the sentence performs such a replacement. Now, if the player wishes to verify a sentence and it is possible to choose a constant referring to an individual who participates in an event such as is described in the sentence, he will choose this constant. This makes the (in)definite noun phrases in effect existentially quantified. If there is a counterexample, the player wishing to falsify the sentence will choose a constant referring to this. If he is unable to choose such an individual, if $\neg(\exists x)\neg(x \quad p)$, then the noun phrase in effect is universally quantified— $\neg(\exists x)\neg(x\ p) \leftrightarrow (\forall x)(x\ p)$. These replacement rules define choice functions determined by the preferences of two individuals, Myself (**M**) and Nature (**N**). Because these

individuals have different preferences in the game of verification, the choice functions $f_{+\mathbf{M}}$ and $f_{+\mathbf{N}}$ have different semantics: the first is equivalent to an existential quantifier and the second to a universal quantifier.

The account I will provide is not precisely that of game-theoretical semantics. Except in § 7.1 I will make no reference to a game of verification. I use reasoning within a game to explain the use of the (in)definite and (non)specific determiners, but the game I will refer to is the game of reference, the cooperative, non-zero sum game of coordination whereby the speaker and hearer arrive at a common understanding of the referent of a referring expression. I discuss this game in depth in the next chapter.

Obviously we can't arrive at too many interesting generalizations considering only particular individuals as choosers, and I do not wish to make use of the theoretical individuals Myself and Nature, but there are certain generalized individuals relevant to every speech act, namely the speaker and the hearer, **S** and **H**. In the following chapters I will seek to show that the semantics of the (in)definite and (non)specific determiners are adequately given by the following four interpretation rules.

$$[\![\textit{the}\ \mathrm{N}']\!] = f_{+\mathbf{H}}([\![\mathrm{N}']\!])$$

$$[\![\textit{a}\ \mathrm{N}']\!] = f_{-\mathbf{H}}([\![\mathrm{N}']\!])$$

$$[\![\textit{certain}\ \mathrm{N}']\!] = f_{+\mathbf{S}}([\![\mathrm{N}']\!])$$

$$[\![\textit{any}\ \mathrm{N}']\!] = f_{-\mathbf{S}}([\![\mathrm{N}']\!])$$

I shall explain these formulas in the following chapters.

1.4 STRUCTURE OF THE DISSERTATION

I shall now describe the plan of the remainder of this dissertation. Because the four determiners I will examine are normally considered a heterogeneous group by other

scholars, there will be no section set aside in which I will review the literature on them. Rather, I shall review literature as it becomes pertinent to the topic I am discussing. Chapters 2 and 3 concern the (in)definite determiners. In chapter 2 I discuss the "referential" uses of these determiners, their use in referring to particular individuals in particular situations. In chapter 3 I discuss their "non-referential" uses, their use in referring to such things as kinds and abstract or arbitrary individuals. I borrow the terms referential and non-referential to categorize these uses from such studies as Gundel, Hedberg, & Zacharski (1993), and DuBois (1980). I use these terms because of their historical priority, although if one accepts the theory I will present, better labels might be concrete and abstract reference. In chapter 4 I turn away from the (in)definite and (non)specific determiners briefly to provide an overview and tentative analysis of the notion of specificity. In chapter 5 I present a rational implicature analysis of *certain*. In chapter 6 I present a rational implicature analysis of *any*. Though this pair of expressions constitutes the (non)specific determiners, I discuss them separately because in the literature they are discussed separately, unlike the (in)definite determiners. My analysis will demonstrate their affinities. In chapter 7 I will conclude. I will recapitulate in brief the analyses of the preceding five chapters, and I will delineate areas requiring further work and avenues down which this manner of analysis could advance.

Chapter 2: referential (in)definites[1]

Two themes recur in analyses of (in)definiteness: uniqueness and familiarity. Paradigm cases illustrating the importance of uniqueness are noun phrases modified by superlatives or ordinals. In such noun phrases, the definite article is all but obligatory, and by the nature of superlatives and ordinals the referent of the noun phrase is almost invariably unique.

(1) This is the/*a best movie I've ever seen.

(2) This is the/*a third movie I've seen this year.

To say that the referent of a noun phrase is familiar is to say, roughly, that the hearer knows to which entity the speaker is referring with that phrase. Paradigm cases illustrating the importance of familiarity to (in)definiteness are discourse anaphoric definite noun phrases.

(3) I met a woman$_i$ at Guercio's the other day when I was shopping for lemons. The woman$_i$ had two gold teeth in her upper jaw.

The same woman is at issue in the second sentence as in the first and her properties do not change from one sentence to the next. All that changes is the interlocutors' knowledge of the woman and each other: the woman comes to be mutually familiar. (In)definiteness viewed in terms of uniqueness is a semantic matter, inasmuch as uniqueness resides in properties of the model against which sentences are interpreted. (In)definiteness viewed in terms of familiarity is a pragmatic matter, inasmuch as

[1] The material presented in this chapter has also appeared in Houghton (1996c, 1997, 1998). The comments of the audiences at the first two conferences and Darren Longo, the commentator at the second, have

familiarity resides not in properties of the model, but in properties of the interlocutors' knowledge of this model. (In)definiteness thus concerns elements of meaning which straddle the boundary between semantics and pragmatics.

All current analyses of (in)definiteness acknowledge both of these aspects as descriptive facts, though they differ as to which they conceive of as fundamental. To produce a complete empirical description, each of these subvarieties of definiteness must be decomposed into particular rules: the NP must be marked as definite if its referent is unique in the universe, in the immediate physical context, if it is topical, and so forth (q.v. Hawkins, 1978). One failing of analyses of either stripe is that they do not provide a system of inference adequate to predict when a particular rule of definiteness will apply or just what unites these rules. Throughout this chapter I will refer to such a system as a SYSTEM OF INFERENCE OVER RULES OF DEFINITENESS. An issue which current analyses fail to address at all is why a language should indicate (in)definiteness. In the following pages, I shall present an analysis of (in)definiteness which does not differ greatly in its descriptive consequences from more conventional analyses. It will differ, however, in three respects. One is the formal ground from which it springs — game theory rather than predicate logic[2]. Another is that it provides a motivation uniting inferences over rules of definiteness. The third is that its justification is not only the completeness of its treatment of the descriptive facts, but the explanation it provides for the marking of (in)definiteness at all in natural languages: (in)definiteness marking provides perhaps a very general means of ensuring the success of acts of reference.

I will divide my discussion of (in)definiteness into two chapters. In the first, I will introduce a choice-functional rational implicature account of (in)definites as it applies to referential noun phrases. I understand a referential noun phrase to be one which refers to

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contributed to whatever of quality one may find herein.

[2] The analysis presented bears only a tangential relation to the game-theoretical account of definite descriptions presented in Hintikka & Kulas (1985). The latter focuses on verification rather than

an ostensively definable individual or an individual in a non-actual world of discourse which the interlocutors treat as ostensively definable. Such individuals include particular people, plants, objects, places, and institutions in the actual world and their fictional analogues in non-actual worlds — characters, scenery, settings, and so forth. If this is only a roughly defined category, this does not matter for our purposes; ultimately I intend to show that the same semantics applies to referential and non-referential (in)definite noun phrases, if only we admit certain classes of non-ostensively definable individuals into the domains of our models. The second chapter dealing with (in)definiteness will concern non-referential noun phrases, in particular, predicate nominals and generics. To condense the argument of these two chapters down into a single phrase, the essence of indefiniteness is hearer choice. The definite article indicates that the speaker believes she would be satisfied were the hearer to choose a referent for the noun phrase; the indefinite article, that she does not believe this.

I will divide my discussion of referential (in)definites itself up into two sections. Each section concerns a different rational implicature-based account of (in)definiteness. The first account is somewhat simpler conceptually; it involves no discussion of restrictions over choice functions. I will refer to the first account as the game-theoretical account; to the second as the choice functional rational implicature account or simply as the rational implicature account. It must be born in mind that these are only names. The first account involves more discussion of game theory, so it is the game-theoretical account, although game theory is a general theory of rational choice. The second account is the choice functional rational implicature account because it crucially involves discussion of restrictions over choice functions; I call it the rational implicature account at times only because this is a shorter expression than ‘choice functional rational implicature account’.

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interpretation, and the analysis derived therefrom is similar in many respects to the discourse representation theoretic analyses of Kamp (1981) and Heim (1982, 1983).

My discussion of referential (in)definites proceeds as follows. First, I will examine (in)definiteness in terms of uniqueness and familiarity, paying particular attention to respects in which an analysis in terms of either notion is problematic. Problems arise for uniqueness analyses when the uniqueness is relative either to an unspoken restriction or to discourse knowledge. Problems arise for familiarity analyses where simple notions of familiarity prove inadequate. After this presentation of descriptive facts, I will explore the game-theoretical notions relevant to my analysis. I will describe the properties of games of pure coordination, and I will demonstrate the importance of mutual knowledge in solutions to these games. I will then show how the meaning conveyed by the (in)definite articles or their absence may be derived assuming these articles signal certain game-theoretical properties. And I will examine presuppositions and entailments of existence which accompany uses of the (in)definite articles. I will conclude my discussion of the game-theoretical analysis by showing how the game-theoretical function I claim for the determiners allows them to serve a general purpose in communication. I will conclude the chapter by demonstrating how the game-theoretical account may be transformed into a choice functional rational implicature account.

2.1 UNIQUENESS

Interpreting definite articles as signifying the uniqueness of the referent of their noun phrase begins with Russell's treatment of definite descriptions, illustrated in (4) in my own notation.

(4) $[\![\text{The King is bald}]\!] = (\exists x\text{: King})((\underline{\forall y\text{: King})(y = x)} \wedge x \text{ bald})$

(4) says that *The King is bald* means there exists a king, this king is unique, and he is bald. By and large, this seems to be an accurate rendering of the truth conditions of *The*

King is bald. As I mentioned above, the issue of uniqueness arises more clearly when the common noun in question is analytically unique in its reference, as when it is modified by a superlative or ordinal adjective. Uniqueness within some context is an entailment of these modifiers. That it is uniqueness which is the relevant parameter is illustrated by the necessity of the definite article even when the other content words are all replaced with nonce forms.

(5) That is <u>the/*a best/first tove</u> I've ever outgribben.

That we are dealing with a semantic restriction and not an arbitrary rule of grammar is shown by the fact that expressions entailing uniqueness outside either of these two classes of words, such as the words *only* and *unique*, pattern in the same way.

(6) This is the/*a only/unique solution to the problem.

The relevance of uniqueness is further illustrated by the instances where this pattern breaks down:

(7) <u>A first date</u> is always a little rough.

First dates are unique in the context of particular relationships. When one abstracts away from particular relationships however, as in (7), the referent of *first date* is no longer unique, so the indefinite article is appropriate. It is not the expressions themselves which require the definite article, therefore, but the uniqueness they imply in context. Example (7) notwithstanding, all of the instances of definiteness presented in this section so far submit with little difficulty to a Russellian analysis[3].

[3] Some have questioned whether this analysis can handle definite plurals, but these too submit to such an analysis given a satisfactory treatment of plurality. A pioneering analysis of this sort is Link (1983), for whom count nouns form a lattice and plural nouns are non-atomic elements of this lattice. A similar treatment is presented in Ojeda (1991).

The severest problems for the uniqueness account are presented by examples such as (3) and (8).

(8) Put it on the chair. [where there is more than one chair in the room, but one is salient by proximity to the hearer or speaker, by its distinctive appearance, by its having been in the past the "designated chair", etc.]

The problem in (3) is that in order to salvage the uniqueness analysis, that is, in order to define the sense in which the referent is unique in the second sentence, one must make reference to the discourse knowledge of the interlocutors, in effect importing the familiarity analysis. Chierchia (1995), for one, has suggested such an account. According to Chierchia, every definite noun phrase is covertly restricted by an n-place relation over "anaphoric indices". In sentences (4)–(6) and the like, this is a zero-place relation, so it has no effect on the interpretation of the noun phrases. In (3), the covert relation would give the second sentence a logical form equivalent to that of (9).

(9) The woman whom I met at Guercio's the other day when I was shopping for lemons had two gold teeth in her upper jaw.

While this approach will work, it is rather unconstrained as stated. It requires a theory of covert relations over anaphoric indices. This is more or less what the familiarity theories provide. See, for instance, Hawkins (1978).

Example (8) is more problematic than (3) for the uniqueness analysis of definiteness, because, unlike (3), it requires reference to vaguely determined extra-linguistic information. Whereas (3) may be enriched with some number of covert anaphors, it is not clear which indices in what relation would be necessary to enrich (8) sufficiently, nor is it clear just what these indices would refer to. Imagine that the chair is salient because it is taller than the rest and is centrally located. Which of the following would then be the appropriate enrichment of (8)?

(10) a. Put it on the chair which is taller than the rest.

b. Put it on the chair which is centrally located.

c. Put it on the chair which is taller than the rest and is centrally located.

d. Put it on the chair which is visually salient.

Any one of these would do. If Chierchia's analysis is to apply to (8), then we can no longer say that (8) has any determinate semantic analysis. For Chierchia's analysis, it will not do simply to say that the definite article is an existential quantifier over relations, because he wishes certain distributional restrictions to follow from the anaphoric indices involved in particular cases. More generally this analysis will not do, because it leaves open the nature of the relations, and thus it fails to predict when definiteness should be marked — one can always define some relation over some unique set of indices.

Intuitively, the hearer reasons thus about (8): the speaker is referring to a particular chair; she thinks I will recognize which this is; I must deduce which it is; for most of the chairs, I can see no reason why she or I would pick it out over the others; one chair, however, is unique; it is unique in a way that both of us must recognize; and both of us must recognize that the other will conceive of this chair in the same fashion that the other does; thus, she must recognize that this and no other chair draws my special attention, and, having no other basis on which to choose, I will choose this chair; and if she knows this and hopes her reference to succeed, she must intend to refer just to this chair. From this reasoning, the covert relation for (8) should be something like "to which the speaker is referring". If this covert relation is available, however, it is applicable in every case, and the notion of covert relations is reduced to triviality. Chierchia's theory provides an interpretation of (3), namely (9), which is wholly semantic, but for (8) it requires a solution which is wholly pragmatic, and this same solution, if available, would work equally well for (3).

To summarize, the uniqueness theories handle analytically unique referents admirably. To handle discourse anaphoric definite noun phrases, they must covertly

import a familiarity theory, and thus they are not complete. It is the nature of uniqueness theories that they emphasize the semanticness of (in)definiteness. This is tenable so long as the basis of uniqueness is describable in simple model-theoretic terms. Discourse anaphoric definiteness requires at the very least a more complex model theory and syntax of semantic representations, such as Chierchia's anaphoric indices. There are uses of (in)definiteness, however, which defy model-theoretic treatment. These are cases, illustrated by (8), in which it seems one cannot define the uniqueness of the referent without the use of cognitive terms. These involve pragmatic inferences which resist assimilation into a uniqueness analysis.

2.2 FAMILIARITY

The familiarity account takes off from just those uses of (in)definite determiners that cause problems for the uniqueness account. Particular versions of the familiarity account differ in their degree of formality and their other theoretical alliances, but representative examples are Christopherson (1939), Hawkins (1978), Kamp (1981), Heim (1983), and Gundel, Hedberg, & Zacharski (1993). What distinguishes all of these accounts is some reference to the cognitive state of the hearer in defining the semantics of the (in)definite determiners. In the discourse representation theories of Heim and Kamp, for instance, it is proposed that the hearer develops a discourse representation over the course of a discourse, and definite NPs refer to discourse referents in the domain of this

representation or whose presence in it may be inferred.[4] To illustrate, if one hears the sentence *I went up to* <u>*a house*</u> *and knocked on* <u>*the door*</u>, it is proposed that one first introduces a discourse referent anchored to a house into one's representation of the discourse. The hearer introduces this referent because the indefinite article instructs him to do so. Given that this referent is a house, one may infer the presence of a referent which is the door of this house. Upon hearing *the door*, the hearer searches for a pre-existing referent in the discourse representation which is anchored to a door. If none is available, he concludes that one must be inferable, performs the necessary inference, and arrives at the correct interpretation of the utterance.

As Chierchia has pointed out, what I have been calling analytically unique referring expressions are somewhat problematic for this account. These are exemplified in (1)–(2) and (5)–(6). These expressions are problematic because they may be created ad hoc, as (6) illustrates, and every member of this infinite set must be inferable from every discourse representation. On the one hand, these inferable referents are not *familiar* in any sense, and thus they compromise the explanatory value of familiarity. On the other, it seems unwarranted to assume that hearers can accommodate an infinite set of discourse referents for any discourse. This criticism is not too telling if one is simply willing to extend one's notion of familiarity (though the extension required in this case amounts to equating familiarity in a certain class of instances with uniqueness). As to accommodating an infinite number of referents, this is required in principle in any case, because there is no principled limit to the length of a discourse. Moreover, no hearer is ever actually required to accommodate an infinite number of referents; it is only required that he always be prepared to add new discourse referents by inference.

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[4] More precisely, definite NPs refer to individuals in the domain of the model *via* discourse referents. One might term the relationship between the NPs and their discourse referents 'reference' as well, however. Since in some cases one must infer the existence of discourse referents (see the next paragraph), they must have some status in the mind of the hearer.

The problem presented by analytically unique reference still remains in the following form: If these instances require accommodation, why is it that the form which does not require accommodation (the indefinite article) is not appropriate? In other cases in which accommodation is invoked, one characteristic of the phenomenon which is used to support the analysis is its variability: accommodation usually requires the creativity and cooperation of the hearer, who may fail or refuse to accommodate the presupposition in question (e.g., Lewis, 1979; Roberts, 1997). Moreover, if one is required to introduce any discourse referent which one could infer exists, what are the limits on this kind of inferences? Without a theory of these inferences, one's theory of (in)definiteness is rather unconstrained.

One may regard the theories of Christopherson and Hawkins as versions of the necessary theory of inference. Their notion of familiarity is perhaps better described as hearer-identifiability, and much of their work is an attempt to describe what strategies hearers are expected to use to identify definite referents. For instance, Hawkins identifies the following rules: a referent is identifiable if it is has been mentioned in the conversation, if it is visible, or if it is present in the context of the conversation. (11), therefore, would be understood to contain a reference to the Brooklyn Bridge in a conversation about Brooklyn.

(11) Do you like <u>the bridge</u>?

In a conversation in a garden containing a bridge, it would be understood to contain reference to that bridge; and in a conversation in San Francisco, it would be understood to contain reference to the Golden Gate. Cruse (1980), in a commentary on Hawkins, observed that there is a further rule of identification which ranks the other rules, so in a conversation about Brooklyn, whatever the context, the reference would be to the Brooklyn Bridge; otherwise, if the context were the garden, it would be the visible

bridge; and excluding both of those cases, if the conversation were in San Francisco, it would be the Golden Gate — CONVERSATION > VISIBLE > LARGER CONTEXT.

Clark & Marshall (1981) point out a further pragmatic constraint on definite reference which complicates familiarity theories and any uniqueness theories making use of them. This is a requirement that the referent of a definite noun phrase (or the process by which it may be recognized) be mutually known. Their examples illustrating this involve a series of scenarios in which two people discuss a Marx Brothers film festival at the Roxy and later one says to the other,

(12) Have you ever seen the movie showing at the Roxy tonight?

The understood referent of the underlined expression will change from what it would have been in the morning if, over the course of the day, changes are made in the line-up at the Roxy and this change is mutually known. Furthermore, Clark & Marshall illustrate that reference may fail if the states of knowledge of both interlocutors regarding the film and each others' states of knowledge don't perfectly coincide. For example, if the speaker knows that the lineup has changed and knows that the hearer doesn't know of the change, she will not say (12): the hearer would assume she was referring to the movie which had been scheduled. If she knows of the change and knows that the hearer knows of the change but believes the hearer doesn't know that *she*, the speaker, knows, she will not say (12): again, the hearer would assume she was referring to the other movie. Moreover, she will not say (12) if she knows of the change, the hearer knows she knows of it, she knows that the hearer knows she knows, and the hearer knows that she knows he knows, if she does not know that the hearer knows she knows he knows. I will not go further into their reasoning here, as it is quite involved. There are other classes of examples, however, which illustrate that at least some degree of meta-knowledge is relevant to definite reference, and this is consistent with the requirement of mutual knowledge. Examples (13)–(15) are representative of these classes.

(13) [unrecognized common acquaintance]

You taught at PS 50? You must know a boy called Elmo.

(adapted from Hawkins 1978)

(14) [retelling][5]

A: There once was a young man named Gustav who lived by himself… One day, Gustav saw a cat… Now, do you remember what happened?

B: Let's see… There was this man who saw a cat …

(15) "Landlord," said I, going up to him as cool as Mt. Hecla in a snowstorm— "landlord, stop whittling. You and I must understand one another, and that too without delay. I come to your house and want a bed; you tell me you can only give me half a one; that the other half belongs to a certain harpooneer. And about this harpooneer, whom I have not yet seen, you persist in telling me the most mystifying and exasperating stories tending to beget in me an uncomfortable feeling towards the man whom you design for my bedfellow— a sort of connexion, landlord, which is an intimate and confidential one in the highest degree. I now demand of you to speak out and tell me who and what this harpooneer is, and whether I shall be in all respects safe to spend the night with him."

(Herman Melville, *Moby Dick*, chap. 3)

In all three examples — the relevant part of (14) is **B**'s response —, what is at issue is the hearer's knowledge of the speaker's knowledge of the referent. From the second sentence in (13) we may infer that the speaker knows, or knows of, the boy called Elmo, and that she knows, or can infer, that the hearer knows this boy; but by implication she does not already assume that he knows she *knows* that he knows the referent. Were the latter the case, she would have used a definite article. This point is perhaps made more clearly by (14). Here, what is at issue, because it is a variety of exam question, is the hearer's knowledge of the speaker's knowledge. The hearer knows the story, because he told it

[5] (14) might be an instance of repetition rather than retelling, in which case there would be no question of mutual knowledge. To account for this, I conducted an informal experiment in which I told individuals a story and gave them a set of pictures to study which illustrated this story. I told them I wished to know how they would recall and recount the events — I told them in effect that I was interested in the nature of narrative memory, not verbatim recall. I explicitly said that they should retell the story in their own words with as much detail as they could remember. Though they knew I knew the story, they believed I held no preconceptions as to how well *they* knew the story after having heard me tell it. In no case did anyone

first, and by this same fact, the speaker knows the hearer knows it. What remains in doubt for the hearer, however, is whether or not the *speaker* knows it. This is the substance of his question. (15) is another example of retelling, this time not fabricated but excerpted from *Moby Dick*.

These examples are problematic for familiarity theories because the referent in these cases is familiar to the hearer and identifiable by him, and this is known to the speaker, and yet she uses the indefinite article. These cases can be accounted for if, as per Clark and Marshall's suggestion, not simple identifiability is required for definite reference but *mutual* identifiability. That is to say, given a speaker **S**, a hearer **H**, and a referent *x*, both **S** and **H** should be able to identify *x*, they should both know the other's state of mind with regard to *x*, both should know the other's state of mind regarding their own state of mind with regard to *x*, and so on ad infinitum. I shall have more to say concerning mutual knowledge shortly.

Returning to the larger issue at hand, Christopherson, Hawkins, and Clark & Marshall provide *elements* of the theory of inference necessary in a theory of (in)definiteness, but they provide no over-arching logic from which these elements derive. What logically links familiarity to uniqueness, identifiability in a larger context to identifiability in conversation, mutual knowledge and the ranking of strategies to all of these? Their elements together do not constitute a theory. A theory of inference over rules of (in)definiteness is still wanting.

We must recognize yet another qualification to the account of (in)definiteness presented so far. This is forced on us by examples such as (16).

(16) If you're going to Madrid you must visit <u>the Prado</u>.

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substitute a definite article where I had used an indefinite article in the first telling. Needless to say, there is more to retelling than I am able to say in this chapter.

The problem is that (16) does not presuppose that the hearer is familiar with the Prado at all. It is sufficient that the Prado be an institution known by people in the know about Madrid, or even only some subset of such people. That is, (16) presupposes that the Prado is conventionally so called. How can this be if definite reference requires mutual knowledge? One response is that (16) involves accommodation. Note, however, that the speaker has no choice but to demand this accommodation — **a Prado* is out of the question. Another response is that the definite article is simply a part of the name of the institution. This response is unsatisfactory because it begs the question why it is always the definite and never the indefinite article which can become fixed into a proper name.[6]

I believe (16) does involve accommodation, but it is not accommodation of familiarity with the referent of *the Prado*, but familiarity with the convention linking *the Prado* to its referent. To know this convention is to know that *Prado* uniquely designates the Prado. The speaker might say (17) instead of (16).

(17) If you're going to Madrid, there's <u>an art museum</u> there you must visit. It's called <u>the Prado</u>.

(17) does not pragmatically presuppose the hearer's familiarity with the referent of *the Prado*; therefore, this referent is initially referred to with an indefinite noun phrase. To introduce this referent with the expression *Prado*, however, is to presuppose the hearer's familiarity with this expression, which is conventionally associated with a unique referent. To introduce the Prado with *Prado* is to introduce it as *the Prado*.

We are now in a position to state a descriptively (almost) adequate[7] theory of definiteness:

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[6] A case analogous to (16) is presented by equational sentences used in instruction, such as *this is <u>the master cylinder</u>*. Such examples require further discussion. See § 3.1 below.

[7] It fails for proper nouns, mass terms, and words such as *man* or *humanity* which serve to rigidly designate a kind in the same manner as proper nouns. See chapter 3.

(18) <u>Definiteness</u>: given a nominal N' with extension ($[\![N']\!]$) and mutually known contextually available restrictions A (a set of sets, licensed by our rules of definiteness), mark N' as definite iff $\cap(A \cup \{[\![N']\!]\})$ is a singleton set.

Simplifying somewhat, this definition says that definite noun phrases are so marked because the mutually known contextually available restrictions on the domain of individuals — restrictions to the domain of individuals mentioned in discourse, say, or present in the immediate physical environment, and so forth — intersected with the extension of the common noun (at the relevant world and time) gives a single individual. This is merely the uniqueness account of definiteness hybridized, via the restrictions A, with the familiarity account. Be this as it may, (18) leaves unanswered why precisely *(in)definiteness* should be a semantic category which recurs cross-linguistically, or that occurs at all. It also only assumes that some theory of inference may produce the rules of indefiniteness necessary to generate A. I shall now attempt to address both these deficiencies. In the process, I shall rephrase the definition above in simpler, more natural terms so that it also concerns indefiniteness marking and bare common nouns. First, I shall have to provide an informal introduction to the theory of games of pure-coordination.

2.3 GAMES OF PURE COORDINATION

A game, for the purposes of game theory, is any problem of interdependent decision. We may consider a decision in terms of the options available to the individual deciding and the payoffs associated with each of those options, that is, the outcomes associated with choosing each option ranked in terms of preferability. It seems a general truth about decision making that individuals choose the option which gives them the greatest payoff: this is the definition of rationality I presented in § 1.2. Some decisions are such that they interact with the decisions of others, so every option for a particular decision maker

determines a list or matrix of payoffs, and the payoff she actually receives depends on the options chosen by the other decision makers. These are the problems of interdependent decision which game theorists call games, and they call the decision makers in these problems players. We shall consider only two-person games. These may be represented formally as two-dimensional matrices[8] wherein one player chooses a row and the other a column, and at the intersection of a row and a column is a pair of payoffs, one for the row-player and the other for the column-player (I will at times refer to the row-player simply as Row and the column player as Column). To illustrate, consider the decision you must make when you wish to pass someone else in a hallway. If you step to your right and the other person steps to his right, you pass each other (assuming you are walking in opposite directions). If you step to your right and he steps to his left, you collide. Let us represent the payoff of passing the other person as 1, one unit of desirability, or utility, and the payoff of colliding as 0 — to collide is less desirable than to pass, and we shall signify this by assigning it a lesser utility. Considered as a game, this is represented by the matrix in figure 1.

	left	right
left	1 1	0 0
right	0 0	1 1

figure 1: the game of passing in the hall

Notice that the payoffs for both players are perfectly aligned: neither player ever desires an outcome which is to the detriment of the other; if the two together achieve an outcome to the satisfaction of one player, it will be to the satisfaction of the other as well. Such games are called games of pure coordination. They were first so dubbed by Schelling (1960), and their relevance to linguistic problems was first recognized, to my knowledge,

[8] I am ignoring the distinction made in game theory between the normal and the extensive form of a game.

by Lewis (1969). Because the payoffs for both players are symmetric in games of pure coordination, I will represent them with simplified matrices containing the value of only one payoff in every box.

Let us examine for a moment how one solves games of pure coordination. Consider an example from Schelling (1960). Imagine that you and another person have parachuted into a strange country. You wish to meet, and you have the same map of the territory you've landed in, but neither of you knows just where the other has landed. You both thus must choose some point on the map and head for it. Assuming you have to get within *r* units of distance from the other to succeed, and assuming the area of the territory is *A*, the odds of your running into each other if you choose points at random is roughly $\pi r^2/A$. For example, if *r* is 100 meters and *A* is one square kilometer, the probability of your meeting is roughly 0.03. It behooves you, therefore, to apply some strategy to guess which point the other will choose to go to. Now imagine that you have map (a) in figure 2.

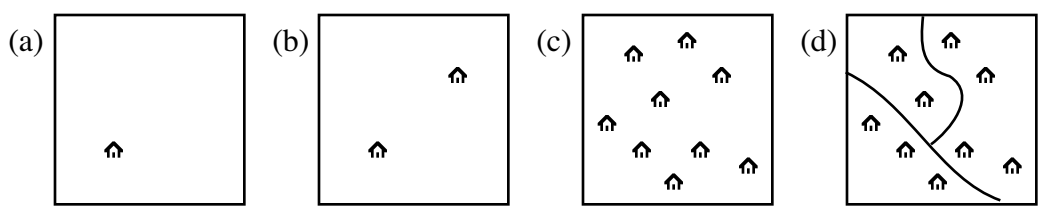

figure 2: the game of meeting

Setting aside the corners and edges, there is only one feature on this map, a single house. The house defines a point on the map such that if you both head for it you will get within *r* of each other and you both will win. The point defined by the house is no better nor worse for meeting at than any other point, but it is the only distinguished point on the map. As such, it will draw your attention. Each of you knows that the other will consider going to the point defined by the house. Neither of you knows this with regard to any

Since all the games we will be considering are games of a single decision, the two forms coincide.

other point. Neither of you will succeed if he goes to a point the other has not even considered, and every spot on the map other than the house is potentially such a point. Thus, when the house is compared with any other point on the map, the prior odds favor the house. Furthermore, if both you and the other person reason in this way, each of you is certain to choose the house and every other point is a sure loss. The most obvious solution to (a), therefore, is the house, the sole distinguished point on the map.

If you compare map (a) to maps (b) and (c) without any further reasoning, it appears that your odds of success decrease from 1:1 to 1:2 to 1:9; these are your odds if you choose a house on each map but choose randomly among the houses. Just as there was a means of improving the odds of (a), however, there are means of improving the odds of the other two maps. Consider in particular the situation that would arise if you first parachuted into territory (a) and then into territory (b) or (c). In the case of (c), there would be at least one distinguished house among the houses, namely, the one in the same position as the single house of (a). There are other strategies for choosing a distinguished house in (c), but none of such general applicability as simple precedence: what worked once may work again given no other basis for choosing. This same strategy may serve as a solution to (b), which otherwise has two clearly distinguished houses: the one you've visited before and the one you've never visited. However, since lack of precedence can only work in a subset of the cases in which precedence also will work, precedence is the more general and preferable strategy. (d) is a simpler problem to solve than either (b) or (c) without precedence, since it contains only one most salient distinguished feature, the crossroads. With precedence, the solution to (d) is not so clear. It is an empirical question whether people actually playing this game will tend to choose by precedence or by visual salience.

The games of meeting illustrated in figure 2 may be taken as a general template for games of pure coordination. What deserves particular note is the variety of strategies by which one may choose a distinguished point in a map. One may go by precedence,

visual salience or uniqueness (the crossroads), proximity to one or another edge of the map, proximity to some axis or the center of the map, the absolute lack of distinguishing characteristics, and so on. The game of choosing a point on the map can thus be reduced to one of choosing among strategies for choosing points (or equivalence classes of strategies, where all the members of a particular equivalence class select the same point as distinguished). This improves one's odds provided one thinks similarly to one's partner in the game and neither is too creative. What is the relevance of all of this for a theory of (in)definiteness? Quite simply, the rules of inference required to win games of pure coordination are precisely those required to infer the referent of a definite noun phrase. Compare the discussions of figure 2 and (8), the salient chair example. In the first case, each player must choose among points without any knowledge about how the other is choosing. In the second, each interlocutor must choose among chairs without any knowledge about how the other is choosing. In both cases the winning strategy seems to be to choose the most salient option. All that differs in our discussion of the two cases is whether we are referring to points or chairs, players or interlocutors. Note also that choosing by precedence is the same as choosing by familiarity. I shall elaborate on this further below.

Now consider the games represented in the matrices of figure 3.

(i)

		a		*b*	*c*	*d*	
		1	2	3	4	5	6	7
	1	1	0	0	0	0	0	0
a	2	0	1	0	0	0	0	0
	3	0	0	1	0	0	0	0
b	4	0	0	0	1	0	0	0
c	5	0	0	0	0	1	0	0
	6	0	0	0	0	0	1	0
	7	0	0	0	0	0	0	1

(ii)

	a	*b*	*c*	*d*
a	1	0	0	0
b	0	1	0	0
c	0	0	1	0

(iii)

	a	*b*	*c*
a	1	0	0
b	0	1	0
c	0	0	1

(iv)

	a	*b*
a	1	0
b	0	1
c	0	0

(v)

	a	*b*
a	1	0
b	0	1

(vi)

	a
a	1

figure 3: mutual knowledge in games of pure coordination

In game (i), each player has options 1–7. Each player also has a number of strategies to reduce the choice set, however. Suppose Row has strategies *a*–*c*, which pick out options 2, 4, and 5, respectively; while Column has strategies *a*–*d*, which pick out options 2, 4, 5, and 6. This reduces game (i) to (ii). If Column knows that only she is considering strategy *d*, she will recognize that *d* is a sure loss and will give it up, reducing (ii) to (iii). Now suppose Column believes that only she is considering strategy *c*, though in fact Row is considering it as well. By the same reasoning she used in game (ii) she will eliminate strategy *c*, reducing (iii) to (iv). Alternatively, if she does not believe this, but believes Row believes she believes this, she will believe Row will eliminate strategy *c*, and thus she herself will eliminate it from her options, again reducing (iii) to (iv). In fact, one may show by induction that the same reasoning obtains for any level of meta-belief; thus a player will always prefer a strategy not believed not to be mutually known to one believed not to be mutually known, everything else being equal.

Among strategies not believed not to be mutually known, there are strategies believed to be mutually known and strategies with respect to which the individual holds no belief as to whether or not they are mutually known. It is compatible with the player's beliefs that among the latter group there are strategies which in fact are not mutually known, or even which are not known at all to the other player. Since any strategy among those not believed not to be mutually known may be of this type, a player will prefer strategies which she believes to be mutually known to those she simply does not believe not to be mutually known, everything else being equal. This gives us the following meta-strategy over strategies: everything else being equal, prefer strategies according to the ranking BELIEVED MUTUALLY KNOWN > NEITHER BELIEVED MUTUALLY NOR NOT MUTUALLY KNOWN > BELIEVED NOT MUTUALLY KNOWN. Let us call this the mutual knowledge meta-strategy.

Returning briefly to figure 3, suppose through these various strategies and meta-strategies game (i) is reduced to game (v). Is there any way to reduce (v) to (vi), a sure

win? There is no general solution, but one may have other meta-strategies over strategies ranking the latter in preference. If such strategies are not known to both players, they do not improve either player's odds, but there is never a penalty for their application, so even if they are jointly but not mutually known, they will ensure success.

A final note is in order regarding terminology. I have been using the term *strategy* in a pre-theoretical sense. One could interpret *strategy* procedurally: it is the process by which one arrives at a choice at any decision point in a game. Alternatively, one could give *strategy* a set-theoretic interpretation: it is a function from decision points to decisions. The latter obviates any need to refer to equivalence classes of strategies, so I will adopt it for the sake of simplicity of exposition. For our purposes, a winning strategy for a particular game of pure coordination is one which is certain to result in the two players' coordinating their choices in that game.

2.4 THE GAME-THEORETICAL ACCOUNT

Now that the groundwork is laid, it is a simple matter to convert the observations above into a game-theoretical account of definiteness. First of all, note that the interpretation of utterances is in fact a game of pure coordination. The speaker must choose a form to represent an idea. The hearer must choose an idea represented by this form. Furthermore, each knows the nature of the other's problem. In effect, each must choose a form-meaning pair, a sign. Each knows that the solution to her problem must also serve as a solution to the other's. They face a symmetric task, and most importantly, they will win jointly or lose jointly; thus interpretation is a game of pure coordination.

Let us call the game of interpretation played in assigning a referent to a referring expression the GAME OF REFERENCE. What constitutes a win and what a loss in the game

of reference played over a referential noun phrase?[9] Let us assume that to understand the non-natural meaning of a referential noun phrase one must understand this noun phrase to be associated with a referent and one must know what this referent is. Now we may translate this into the game of reference: both players win if they both assign the same referent to the expression; both lose if they assign different referents, where assigning a referent amounts to choosing an element of the noun phrase's extension in some possible world(s). Note that there is a third possible outcome of this game, call it a forfeit: the hearer may decline to choose a particular element in the noun phrase's extension, in effect declining to play the game. He may do this, for instance, when he is aware that the speaker means to predicate something of a specific individual but he, the hearer, does not know which one.

With these three outcomes in mind, we may assign a game-theoretical meaning to the (in)definite articles and their absence:

(19) (In)definiteness:

i. the <u>definite article</u> indicates that the speaker believes the hearer has a winning strategy in the game of reference over the noun phrase;[10]

ii. <u>indefiniteness marking</u>, that she believes he does not; and

iii. <u>the absence of (in)definiteness marking</u>, that the game is trivial —

a) either the speaker does not intend to refer to a determinate individual, and thus the game cannot be won,

b) there is only one discrete option, and thus it cannot be lost, or

c) the outcome of the game has no bearing on the success or failure of the utterance.[11]

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[9] At this point I mean only to consider noun phrases whose referents may be referred to again in later discourse with anaphors. This excludes noun phrases with quantificational determiners such as *few*, *many*, and so forth. I will consider so-called non-referential (in)definites in the next chapter.

[10] To possess a winning strategy is not the same thing as to know the value of that strategy. The tallest glunk is whichever glunk is tallest, whatever a glunk might be.

I will now show in more detail how this works, recapitulating one by one the properties of (in)definiteness described above and explaining how each fits into the game-theoretical account.

One of the fundamental properties of definiteness is uniqueness, as was illustrated in (5)–(11), the examples concerning the best outgribben tove and so forth. This follows from the game-theoretical account, because in the game of reference the hearer must choose some element of the extension of the noun phrase via some strategy of selection. It is the nature of strategies of selection that they define a distinguishing property for the elements they select: each strategy of selection chooses a single option on the basis of a property or properties which distinguishes this option from the others. This distinguishing property is the sense in which the element is unique.

Another fundamental property is familiarity, as was illustrated by (3), the example concerning the gold-toothed woman. Familiarity is inherent in the general strategy of precedence in games of pure coordination, as was discussed in conjunction with the maps of figure 2. No strategy of selection is of such general application as precedence: what worked once may work again, all else being equal.

Any account of (in)definiteness must also account for the fact that definite noun phrases imply the existence of their referent. This is one of the two propositions entailed by the Russellian formula, (4). The referent assigned to a noun phrase by the game of reference is some member of that noun phrase's extension, which is necessarily an existent referent.

Example (8), that concerning the salient chair, was problematic because the properties of the situation which justified the definite article were both indeterminate and extra-linguistic, raising the issue of how to constrain the rules of inference which justify definiteness marking. With regard to games of pure coordination, I pointed out that a

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[11] Note that (c) is compatible with both (a) and (b) and that the situation described in (iii) is compatible with that described in both (i) and (ii).

player's problem may be reduced to one of choosing among strategies. Every strategy of a game of pure coordination in fact chooses some distinguished option, which is what is made explicit in the sentences in (10) which expand on example (8). The rules of inference involved in (in)definiteness are nothing other than the strategies which allow one to play the game of reference over noun phrases successfully. The theory of inference necessary to complete a theory of (in)definiteness is just the theory of games of pure coordination. In the game-theoretical account, unlike Chierchia's, one need not postulate covert reference to a particular relation and particular anaphoric indices: all that is necessary is that the speaker believe some such relation be available to the hearer; she need not know which. The game-theoretical account does not force us to codify pragmatic phenomena as linguistic conventions.

The nature of inferences justifying uniqueness came up again with regard to example (11), that concerning the bridge. In this case, it was shown that there was a rule ranking the rules of inference. Just such a possibility, a meta-strategy over strategies, is a possible solution to games of pure coordination, as was discussed with regard to games (v) and (vi) of figure 3.

Finally, examples (12)–(15), those concerning the movie at the Roxy and so forth, illustrated that some notion of mutual knowledge is relevant to (in)definiteness. Note that with regard to this example, what is important is not that definite noun phrases are mutually known, but that they are not believed not to be mutually known. This is not how I phrased my discussion, because this is not how Clark & Marshall phrase their discussion and because their discussion is more perspicuous. Nonetheless, all of the instances in which one would not use expression *the movie showing at the Roxy tonight* are instances in which the speaker *believes* she and the hearer *do not* possess mutual knowledge of the referent, not cases in which she *fails* to believe that they *do* possess mutual knowledge. Likewise, in (13), if the utterance is to be informative, the hearer must not know that the speaker too knows Elmo. All of this follows from the mutual

knowledge meta-strategy I informally demonstrated for games of pure coordination in my discussion of figure 3. If the theory of inference necessary in a theory of (in)definiteness is the theory of how to choose strategies in a game of pure coordination, it follows that definite referents will have to be mutually known, or at least not believed not mutually known.

To recapitulate, a noun phrase is marked as definite when the speaker believes the hearer possesses a strategy which will allow him to pick out the element of the extension of the noun phrase to which she intends to refer. It is this belief which the definite article indicates. The speaker wishes to indicate that she has such a belief because this indication will serve the hearer as good evidence that he in fact does possess a winning strategy, and it thus will ensure that he does not forfeit the game of interpretation when a win, which is preferable to both interlocutors, is likely. If the speaker does not believe the hearer possesses a winning strategy, she marks the noun phrase as indefinite. Her so indicating her belief will serve him as good evidence that he in fact does not possess a winning strategy, and thus he will forfeit the game of interpretation rather than proceeding on a false assignment of a referent to the noun phrase. This too is in the interest of both interlocutors. Wins are preferred to forfeits, which are preferred to losses.[12]

There are two obvious cases in which the game of reference over a noun phrase becomes trivial. If the noun phrase denotes a mass noun, as in (20), though a particular quantity of peanut butter is at issue, it is in the nature of how one refers to mass nouns in English that this quantity is not regarded as important.

(20) I put <u>peanut butter</u> on the bread.

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[12] One might question whether wins are always preferable to forfeits. Specific indefinites do not strike the ear as less felicitous than definite noun phrases. By saying that wins are preferable to forfeits and that these are preferable to losses I am merely saying that it is in general preferable for the hearer to extract as much information as possible from an utterance, and that both interlocutors prefer that he draw true inferences rather than false ones. In § 2.5 I will describe a case in which the speaker would prefer that the hearer extract less information than he might.

If one wishes to refer to the quantity, one uses a partitive expression: *a lump/blob/dollop/tablespoon of peanut butter*. Usually, however, one leaves off the expression denoting a quantity and the expression remaining is that which would denote the mass of which the quantity is a part in the partitive expression. I don't mean this as a theoretical but as an empirical statement. If it is in fact the case that English speakers generally regard the particular quantity of a mass irrelevant, English interlocutors should not play the reference game with respect to this quantity, and since the game is not played, no (in)definiteness of quantity is marked. All that is relevant in the denotation of mass nouns is the kind of this quantity, and this each mass noun denotes uniquely.[13] Again, the game of choosing an element of the denotation is trivial, there being only one choice, and no (in)definiteness is marked.[14]

Though this second game is trivial, the hearer does have a winning strategy, so a language might "choose" to mark mass nouns with the definite article. This is the only option available in French, for instance, which in most cases does not allow noun phrases to be unmarked for (in)definiteness. Compare English *I love milk* and French *j'aime le lait*.

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[13] I am not saying that in (20) the speaker is claiming to have put the kind peanut butter on her bread. Rather, I am saying that the bare nominal *peanut butter* is a partitive expression paraphrasable as *some quantity of the kind peanut butter*. Compare (20) to its French translation, provided by Jean-Pierre Koenig, *J'ai mis du beurre de cacahuetes sur le pain*. *Du* is sometimes considered indefinite, but it is etymologically the contraction of *de* and *le*, *of* and *the*, and *du* arguably always indicates partitivity.

[14] In some languages, noun phases may carry partitive case marking. One might ask therefore whether partitive expressions themselves are definite or indefinite in these languages. I do not offer any hypotheses on this point. In English, the partitive construction may involve both definite and indefinite noun phrases:

(i) a. I drank a cup of a bitter fluid.
b. I drank a cup of the elixir of youth.
c. ?I drank the cup of a bitter fluid when she offered it to me.
d. I drank the cup of the bitter fluid when she offered it to me.

Example (i)c is odd only because one would expect *a bitter fluid* to be an anaphoric definite just as *the cup* is. Note the relative acceptability of the following two examples.

(ii) a. ?She gave me a cup of bitter fluid.
b. She gave me a cup of a bitter fluid. I drank the cup of bitter fluid in one swallow.

The second prominent variety of noun phrase for which no (in)definiteness is marked is proper nouns. Proper nouns are most commonly interpreted as rigid designators, which in any state of affairs can have only one, fixed referent. Again, the outcome of the game of reference is fully predictable in this case, and in English no (in)definiteness is marked on most proper nouns.

Though the game is trivial, the hearer has a winning strategy, so by that criterion the noun phrases in question are still definite and a language might choose to mark them as such. Consider the option of using the definite article with the names of individuals in German, (*der*) *Klaus* versus English *Charles*. Also consider *Kilimanjaro vs. the Matterhorn* and the cross-linguistic variation in the presence of the definite article before the names of countries, English *Turkey* versus German *die Türkei*, or for that matter, *die Türkei* versus *Deutschland*. There is cross-linguistic variation on whether or not (in)definiteness is marked in proper nouns, as the game-theoretical hypothesis predicts; and as the hypothesis predicts, when (in)definiteness is marked, it is always the definite marker which occurs.

A third, smaller class of examples concerns nouns referring to institutions assumed to be unique in any given context, or whose particular identity is considered unimportant. Consider American *go to the hospital* vs. British *go to hospital*. These are fixed, idiomatic expressions. Except in recent times, however, from any given location there was only one hospital that one would go to: whichever was closest. I suggest that these idioms originated in the omission of (in)definiteness marking in a case in which the game of interpretation with respect to the intended referent was trivial.

Though all the examples I have adduced are from European languages, the game-theoretical account of definiteness predicts that as a cross-linguistic universal, in those languages which have (in)definiteness marking, (in)definiteness will be optional, if it is

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One cannot use bare mass nouns if the kind is unfamiliar. This is evidence that bare mass nouns in English

optional at all, at least where the game of interpretation over the noun phrases is trivial. A stronger prediction is that it will be optional only in these cases. In either case, if a game is trivially winnable, the noun phrase should be either definite or unmarked; where trivially unwinnable, either indefinite or unmarked. Any verification of these predictions will have to await further research.

2.4.1 presuppositions

I have described why, under the game-theoretical account, definite noun phrases should imply the existence and uniqueness of their referent. This is only half the argument, however: these implications are in fact presuppositions. I must show, therefore, that definite noun phrases imply the existence and uniqueness of their referent even under negation[15]. All that is necessary to ensure that these implications be presuppositions is that the interpretation of the (in)definite articles depend on elements of the *act* of reference rather than its result, the sense contributed to the utterance by this act. This is in fact how the definite article works, according to the game-theoretical account.

The definite article implies an act of reference, because it indicates that the speaker believes the hearer has a winning strategy in the game of reference over the nominal. The hearer cannot have a winning strategy if the speaker does not intend to play the game. Therefore, by rational implicature the definite article indicates that the speaker intends to play the game of reference over the nominal. If the speaker intends to play the game, she intends to refer to some member of the extension of the nominal. Therefore, because the speaker intends to refer to some entity by uttering it, the definite noun phrase must have a referent. The indefinite article, on the other hand, does not implicate the

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are in effect definite references to kinds.

[15] The persistence of these implications under negation is diagnostic of semantic presupposition. Ad hoc analytically unique definites of the best-outgribben-tove variety would seem to demonstrate that definite noun phrases do not necessarily pragmatically presuppose the existence and uniqueness of their referent. This would require that propositions asserting the existence and uniqueness of the referents of the ad hoc

performance of an act of reference, because the speaker's believing the hearer not to possess a winning strategy is compatible with the speaker's not intending to play the game of reference.

The act of reference is understood to contribute its "sense", a referent, so long as it is performed, regardless of what other expressions may be present in the utterance. To say that negation does not suspend the implications of existence and uniqueness, therefore, is only to say that negation does not cause the act of reference implied by a definite noun phrase to be aborted; it does not cause the definiteness to be a mention rather than a use. This is a stipulation, but a negative stipulation — it does not stipulate what is the case but rather what is not. Moreover, it is a negative stipulation which does not contradict any entrenched or even postulated belief regarding negation. There is no variety of stipulation easier for the skeptic to accept, since the denial of an unproposed proposition hardly restricts one's beliefs at all.

This argument regarding the presuppositions of existence and uniqueness brings to one's attention a counter-intuitive result of the game-theoretical account: indefinite noun phrases do not themselves entail the existence of their referents even in veridical contexts. For example, (21) entails the existence of a cat, but not because *a cat* entails the existence of a cat in a veridical context.

(21) I saw a cat.

The reason this should be so is that the speaker's not believing that the hearer has a winning strategy in the game of reference is compatible with there being no referent for such a strategy to choose. It is also compatible with there being a referent, but it is not only compatible with there being a referent. If we accept the game-theoretical account of (in)definiteness, we must accept that the implication that the speaker saw a cat that one

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noun phrases be part of the common ground, which it would seem could not be so unless the notion of common ground were vacuous.

infers from (21) is a variety of rational implicature, in fact, a conversational implicature: (21) implicates that the speaker saw a cat, because to suppose otherwise would make (21) irrelevant and uninformative. This is a difficult position to defend, since one of the hallmarks of conversational implicatures is that they may be suspended, and it is surely impossible to suspend the implication of (21) that the speaker saw a cat. Nevertheless, I shall show that this is a defensible position.

The reason for introducing a notion of rational implicature in the first place is to give a name to calculable implications not derived from an assumption of cooperation. A hallmark of such implications is that they are not defeasible, because they do not depend on the easily suspended assumption of cooperation. A secondary advantage of recognizing rational implicatures is that one then must recognize that the defeasibility of any implication is predicated on the suspension of some default assumption. This forces one to recognize that it is not by immutable decree that conversational implicatures are defeasible, but only because one usually may suspend the assumption of cooperation. When might it be impossible to suspend this assumption? It seems that it should be more difficult to suspend this assumption if by doing so one was left with no relevant inferences; more difficult if one was left with no informative inferences; and impossible if one was left with no true inferences. (21) has the conversational implication that the speaker saw only one cat. This implication is defeasible: (21) is also true in a context in which the speaker saw a multitude of cats. If one suspends the assumption of cooperation, however, and thereby infers from (21) only that the speaker saw at least one cat, this may still be a relevant and informative inference. In this case, accepting that the game-theoretical account is true, one is still assuming the speaker is being cooperative to the extent that she means *a cat* to refer to some cat. If we give up even this degree of cooperativeness, then one can infer nothing from (21) other than such trivial propositions as ‘the speaker wished to say something’, which are inferable from all utterances and hence are hardly plausible as the intended propositional content of a particular

utterance.[16] Since it would be irrational to utter something without any pretense that someone would regard some inference from that particular utterance as true[17], by rational implicature every utterance has some true implication the inference of which depends crucially on the utterance's form; so by rational implicature one may infer from (21) that the speaker saw a cat.

If the game-theoretical account of the truth conditions of the indefinite article are a little counter-intuitive, the account of the definite article provides just the truth conditions we expect. Consider (22).

(22) The King of France was bald.

The speaker of (22) has indicated that she believes the hearer has a winning strategy in the game of reference played over the expression *the King of France*. This implies she believes he can choose a suitable referent for the phrase. This implies that the phrase has a referent. (22) implies the existence of a referent for *the King of France*. This argument makes reference to the speaker, the hearer, and the definite expression. No other elements of the speech act are at issue. Existence is equally implied, therefore, in denials.

(23) The King of France was not bald.

Now consider (24).

(24) Larry didn't say that the King of France was bald.

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[16] Depending on our semantics for assertions, (21) might entail that there was some event of seeing, that the speaker was the seer, and hence that the speaker saw something. This is a non-trivial inference. If this is inferable from (21), however, we may derive the existence of a cat via another rational implicature: *A cat* occurs in (21); it occurs in the object position of (21), which conventionally contains an expression identifying the thing seen; *a cat* very likely denotes the thing seen, therefore; this is a safe conclusion, and knowing that the hearer will reason so it would be misleading to use this expression if a cat was not the thing seen; it would be contrary to the speaker's preferences to mislead the hearer; the speaker can have no other motivation for using the expression *a cat* as the object of *see*; thus the speaker must intend to refer to a cat; thus the speaker must believe there is a cat. This reasoning does not require that *a cat* entail the existence of a cat in veridical contexts.

[17] I speak of truth here. This argument would have to be rephrased in terms of acceptability to account for such things as commands.

In (24), the expression *the King of France* occurs in reference to another speech act with another speaker, Larry, and perhaps another hearer. It is ambiguous therefore whether the speaker of (24) is merely echoing Larry in using the expression or whether this is her own means of referring. (24) does not commit the speaker to a belief in the existence of the King of France. This is just as we should wish it to be: propositional attitude verbs and verbs of saying act as plugs for presupposition (Karttunen, 1973). The reason for this is that they have a de dicto use: the belief in question attaches to the subject of the propositional attitude verb, not the speaker of the sentence.

The game-theoretical account of the existential implication of indefinite noun phrases requires a startling departure from standard theory. However, it provides an account of the existential and uniqueness implications of definite noun phrases which is in perfect accord with standard theory. That the game-theoretical account provides any explanation at all for the presuppositions of definiteness is an advantage. Many uniqueness or familiarity accounts of (in)definiteness, all those that I have already mentioned,[18] can only stipulate that these implications of definite noun phrases are presuppositions.

2.4.2 Conclusion of the game-theoretical account

(In)definiteness marking is a cross-linguistic phenomenon. If one subscribes to the notion that the features of languages are to some degree selectively retained or eliminated in accordance with their "functional load", the magnitude of their contribution to the language's fitness as a means of communication, one expects a pattern which recurs cross-linguistically to have some functional explanation. An advantage of the game-theoretical account of (in)definiteness, over the definition in (18), is that it does provide

[18] There is a version of DRT explicitly designed to account for phenomena of presupposition projection: the "presupposition as anaphor" theory of Van der Sandt, Geurts, Krahmer, et al. (see Krahmer 1998 and references cited therein). Within this theory, the presuppositional behavior of definites follows from the semantics they are given.

an explanation. The game of reference is not something this theory adds to language. By the nature of language use, speakers and hearers play this game, whatever else one might wish to say about linguistic semantics and pragmatics. Furthermore, the order of preferences among outcomes of this game, WIN > FORFEIT > LOSS, is inherent in the game. The game-theoretical explanation of (in)definiteness, then, is that it increases the odds in favor of the preferable outcomes of the game.

As befits any account of (in)definiteness, the game-theoretical account somewhat muddies the distinction between semantics and pragmatics. The result of a game of interpretation is a denotation, which is of truth-conditional significance, and thus semantic. Playing the game, however, requires consideration of the knowledge, motives, and actions of the other player, which are all quintessentially pragmatic. The fault of the familiarity and uniqueness accounts, which were also ambiguous in their allegiances to semantics and pragmatics, was that they provided no theory of the inferences regarding identity required to make them work. The advantage of the game-theoretical account is that it based on just such a theory: the theory of how one should play games of pure coordination, which is the sort of game one must play in assigning a denotation to a noun phrase.

2.5 THE CHOICE-FUNCTIONAL ACCOUNT

Though at this point it is not obvious why we should wish to do so, we may easily convert this game-theoretical account of (in)definiteness into a choice-functional rational implicature account. I said in § 1.2 that the logic of rational implicatures is game theory. I said in § 2.4 that we may regard the strategies involved in the game of reference as functions from decision points to decisions, possible referents of the referring expression. We may conceive of the game of reference itself as a procedure defining a function from the possible referents of a noun phrase in context to a particular referent. We can represent this as in (25).

(25) $[\![\text{N''}]\!] = f_{\text{GoR}}([\![\text{N'}]\!]) = a : a \in [\![\text{N'}]\!]$

In this case f_{GoR} represents the choice function defined by the game of reference. In § 1.3 I declared that $f_{\mathbf{X}}$ would represent a choice function determined by the preferences of individual **X**. The outcome of the game of reference, as far as the speaker is concerned, is $f_{\mathbf{S}}$; the outcome as far as the hearer is concerned, $f_{\mathbf{H}}$. The speaker will be satisfied with a choice function $f_{\mathbf{X}}$ only if she believes $f_{\mathbf{X}} = f_{\mathbf{S}}$ with respect to the noun phrase in question. In § 1.2 I declared that we would represent the fact that the speaker would be satisfied by a choice function determined by the preferences of individual **X** with the expression $f_{+\mathbf{X}}$. If the speaker believes the hearer has a winning strategy in the game of reference, this means she believes $f_{\mathbf{H}} = f_{\mathbf{S}}$ with respect to the noun phrase in question; which means $[\![\textit{the}\ \text{N'}]\!] = f_{+\mathbf{H}}([\![\text{N'}]\!])$. If the speaker does not believe the hearer has a winning strategy, this means she does not believe $f_{\mathbf{H}} = f_{\mathbf{S}}$ with respect to the noun phrase in question, which means that she will not be satisfied with a choice function determined by the hearer's preferences: $[\![a\ \text{N'}]\!] = f_{-\mathbf{H}}([\![\text{N'}]\!])$. This gives us the choice functional rational implicature account of (in)definiteness.

(26) $[\![\textit{the}\ \text{N'}]\!] = f_{+\mathbf{H}}([\![\text{N'}]\!])$

$[\![a\ \text{N'}]\!] = f_{-\mathbf{H}}([\![\text{N'}]\!])$

The choice functional rational implicature account of (in)definiteness is almost identical to the game-theoretical account in its predictions, but there is a slight difference. As per the preceding paragraph, $f_{+\mathbf{H}}([\![\text{N'}]\!])$ implies one of two things: either (1) $f_{\mathbf{S}}([\![\text{N'}]\!]) = f_{\mathbf{H}}([\![\text{N'}]\!])$ or (2) the speaker would be satisfied if she were misunderstood and the hearer derived a false belief from her utterance. That is, if the speaker will be satisfied by a choice function determined by the hearer's preferences when this choice function is not identical to her own, she will be satisfied with his proceeding on a mistaken interpretation of her referring expression. If we assume even minimal cooperativeness

and rationality on the part of the speaker, this second possibility is ruled out by rational implicature. As far as definite noun phrases go, the game-theoretical and the choice functional rational implicature accounts are identical. The same reasoning does not apply to indefinite noun phrases. Again, $f_{-\mathbf{H}}([\![\mathrm{N}']\!])$ implies one of two things: either (1) $f_{\mathbf{S}}([\![\mathrm{N}']\!]) \neq f_{\mathbf{H}}([\![\mathrm{N}']\!])$ or (2) the speaker would not be satisfied if she were understood and the hearer derived a true belief from her utterance. It might appear that the second case is again so improbable as to be ruled out by rational implicature, but there are uses of the indefinite article which one can argue exemplify just this case. The underlined indefinite NPs in (27) and (28) exemplify such uses.

(27) I met with a student before class. <u>A student</u> came to see me after class as well — in fact it was the same student I had seen before.

(Gundel, Hedberg, & Zacharski, 1993; example (50); underlining added)

(28) A man with a hat came in followed by a man in suspenders and Gulielma, an acquaintance of mine. The man with <u>a hat</u> said, …

The underlined indefinite noun phrase in (27) is coreferential with the identical indefinite noun phrase in the preceding sentence. This is precisely the context in which an anaphoric *definite* noun phrase would be appropriate. The speaker must believe that the hearer has a winning strategy in the game of reference, therefore. Under the game-theoretical account, she would be uncooperative, indeed dishonest, if she didn't use a definite noun phrase in the second sentence, yet (27) is fully acceptable. From (27) one infers that the *relevant* fact is that the speaker met with some student both before and after class. Had the speaker used a definite noun phrase, one might have inferred instead that the relevant fact was that the speaker met with some particular student both before and after class. The hearer would derive this inappropriate implicature from the speaker's choice not to use the indefinite article: the indefinite article would fail to provide any information from which one could infer that it was the same student. Since the speaker

could indicate that it was the same student merely by using the definite article, her choice not to use the definite article indicates to the hearer that she does not mean him to infer that it is the same student. If (27) is a relevant piece of discourse, the hearer must assume that it is relevant that the speaker met with some student both before and after class. If the speaker used the definite article, therefore, the hearer would infer by manner implicature that this is not the relevant implication. This is why the speaker would not be satisfied with a choice function determined by the hearer's preferences. Under the choice functional rational implicature account (27) is both honest and felicitous, if a little unusual. A parallel argument holds for (28).

I have glossed over the issue of presuppositions, arguing only that the choice functional rational implicature account of the definite article is equivalent to the game theoretical account. Let us consider this issue briefly. The inference schema represented in (29) explains the presuppositions of uniqueness and existence inherent in the definite article.

(29) $f_{+\mathbf{x}} \supset \exists f \supset \exists x : x$ is some member of the domain of f

If the speaker believes she would be satisfied by a choice function determined by the preferences of someone, this implies that she believes she would be satisfied by some choice function, which implies that she believes in the existence of some choice function. For a choice function to be defined, it must have a non-empty domain. If the speaker believes she would be satisfied by a choice function determined by the preferences of someone, therefore, she must believe there exist individuals in the extension of the nominal the choice function is applied to. A choice function corresponds to some procedure for choosing a particular individual, which is equivalent to a unique description of that individual. If the speaker believes she would be satisfied by a choice function determined by the preferences of the hearer, this implies she believes the hearer would choose the individual she intends to refer to, which implies that she believes the

hearer has or can infer sufficient information to uniquely describe the individual she intends to refer to. In most cases, this will mean that she has provided enough information in her own description of the referent, in the definite noun phrase, that she can be assured the hearer knows a unique description of it: it implies that she believes the nominal has a singleton extension. Thus the choice functional rational implicature account produces the presuppositions of existence and uniqueness inherent in definite noun phrases.

Be this as it may, the greatest advantage of the choice functional rational implicature account of the (in)definite articles is that it is straightforwardly extendible to the (non)specific determiners *certain* and *any*. Under the game-theoretical account, one uses up all of the parameters of variation of the account simply in explaining the significance of (in)definiteness marking and its absence. The rational implicature account adds a parameter of variation: the individual whose preferences are at issue. I will elaborate on this advantage of the choice functional rational implicature approach in chapters 4–6.

Chapter 3: Nonreferential (In)definites

With a few exceptions, every noun phrase discussed in the previous chapter could be assigned a referent by ostension: one may replace the referring expression with a gesture presenting the referent (or the referent is conceived of as ostensible; some character in the story world could point to it). Such referential (in)definites are all that most theories of (in)definiteness concern themselves with. There is a class of (in)definite noun phrases which are not so clearly describable in these terms, however. For instance,

(1) John became <u>a baker</u>.

is not paraphrasable as

(2) John became ?HIM/THAT.

because, regardless of its felicity, any such paraphrase misses the fact that John does not want to become a particular baker but that he wants baking to be his profession. Similarly,

(3) <u>An even integer</u> is divisible by two.

cannot be paraphrased by ostension to any particular even integer, even presuming one could ostend to some integer. Any expression specifying the semantics of these and similar noun phrases must somehow give one a handle on a noun phrase's intension, not just its extension.

These putatively non-referential noun phrases are obviously problematic for any semantic theory that attempts to define (in)definiteness via a game of reference. I will argue, however, that we may keep the same semantics if we recognize in our metaphysical ontology certain classes of non-ostensively definable individuals: roles,

kinds, parameterized and arbitrary individuals.[1] We keep our semantics of (in)definiteness in terms of a game of reference by in effect allowing reference to intensional objects. For each new intensional entity I introduce I will adduce independent reasons for including it in our ontology of model-theoretic objects. The discussion in this chapter is broken into two sections, the first, § 3.1, concerning predicate nominals and reference to roles, the second, § 3.2, concerning generics and reference to kinds, parameterized and arbitrary individuals.

3.1 PREDICATE NOMINALS

The underlined expression in (4) is a predicate nominal.

(4) Lana is <u>a baker</u>.

(4) has essentially the same syntactic structure as (5).

(5) Lana is the captain.

I will proceed on the assumption that any noun phrased linked to the subject of a sentence with a copula or a verb of naming or becoming is a predicate nominal.

(5) appears to involve equational semantics parallel to that of (6), which has the natural language paraphrase (6).

(6) a. 1 + 1 = 2

b. One plus one is two.

But though the predicate in (4) involves a nominal expression, it seems to have roughly the same semantics as (7).

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[1] I speak a little loosely in suggesting that the last, arbitrary individuals, should be accepted as an ontological category à la Fine (1985). See § 3.2.3.2.

(7) Lana bakes.

These examples suggest two straightforward hypotheses as to the proper semantic analysis of predicate nominals: 1) they are equational in nature, as in (6); 2) they are predicative in nature, as in (7). The logical form of (4) under these two hypotheses is roughly (8) and (8), respectively.

(8) a. $(\exists x\text{: baker})(l = x)$

b. $(l \text{ bakes})$

Intuitively, (8) says there are two individuals, Lana and a baker, and these two individuals are equivalent; (8) says the individual Lana has the property of being a baker.

In that the equational analysis lets predicate nominals have the semantics of ordinary (in)definite noun phrases, it would appear to be the natural analysis for the choice functional rational implicature approach; we already have an account of the semantics of referential (in)definites. The predicative analysis of predicate nominals is that more commonly adopted in the literature. It is explicitly advocated in Burton-Roberts (1976), for instance, and it is implicitly advocated in such works as general textbooks on formal semantics (e.g., Chierchia & McConnell-Ginet, 1990). I shall argue that neither approach can be correct, though the equational approach is in a certain sense more correct. I shall advocate an adaptation of the equational approach in which the predicate nominal refers not to an ordinary individual such as Lana, but a more abstract, non-ostensible sort of individual which I shall term a “role”.

3.1.1 problems with the equational analysis

The account we have so far tells us what to make of the definite noun phrase in (9).

(9) Put your coat on <u>the chair</u>.

The speaker refers to a particular chair and she believes that the hearer can deduce which chair this is. That is, she believes she would be satisfied with the hearer's choice of chairs: she would be satisfied with a choice function over the nominal determined by the hearer's preferences. By the same token our account tells us what to make of the indefinite noun phrase in (10).

(10) A cat ate the suet cake you left out for the birds.

The speaker would not be satisfied with a choice function over the extension of the nominal determined by the preferences of the hearer; she does not believe he has a winning strategy in the game of reference played on the indefinite noun phrase. This would seem to give us an account of the (in)definite noun phrases in (11)–(12).

(11) Bill is the president.

(12) Fluffy is a cat.

One might propose that in cases such as these the speaker is identifying the subject with some individual present in an unspecified context. In (11) the speaker must believe that the hearer has a winning strategy because there can be only one president, hence there is only one choice in the game of reference and the hearer cannot choose incorrectly. In (12) the speaker need not believe that the hearer has a winning strategy, since there is no guarantee that there is only one cat in an unspecified context. If in a particular context there is only one cat, definite reference is appropriate for the same reason that it is appropriate in (11).

(13) Do you like this picture of Fluffy and Scruffy? Fluffy is the cat.

If this account of copular sentences is correct, predicate nominal sentences are essentially no different from equational sentences: the speaker refers to two individuals and asserts that these individuals are the same.

It would be wonderful if our account could stop here, but matters are not this simple. Consider (14).

(14) a. I am the son of Sera Jones, and so is Charles.[2]

a'. ?I am a son of Sera Jones.

b. This piece of iridescent gossamer is the wing of a Balinese moth.

b'. ?This piece of iridescent gossamer is a wing of a Balinese moth.

c. This horrible crash is the fault of the pilot, and so is the destruction of the videotape.

c'. ?This horrible crash is a fault of the pilot.

d. This computer is the property of Eifresser Realty, and so is the van.

d'. ?This computer is a property of Eifresser Realty.

In all of these cases the predicate nominal must be marked as definite regardless of the uniqueness of its apparent referent. Consider also (15).

(15) a. I am not the son of the Abbess.

b. This piece of iridescent gossamer is not the wing of Archangel Gabriel.

c. This horrible crash is not the fault of the king of the gremlins.

d. This computer is not the property of Hobo Jim.

I have written these examples to bias the judgment of the reader, but (15) clearly do not presuppose the existence of the son of the Abbess, the wing of Archangel Gabriel, the fault of the king of the gremlins, or the property of Hobo Jim. Compare (15) to (16).

(16) The fault of the king of the gremlins is not that he is bald.

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[2] This category of example was suggest to me by Jean-Pierre Koenig, who cited Matthew Dryer (p.c.). Some, but only some, who have read my first two pairs of examples in (14) have indicated that they disagree with my assessment of their relative felicity.

Although it remains difficult for the reader to accommodate a belief in the existence of the king of the gremlins, (16) clearly does presuppose the existence of something which is his fault, whereas (15) does not presuppose the existence of any such thing. Contrary to the equational analysis, definite predicate nominals do not have the presuppositions of ordinary definite noun phrases.

Another problem with the equational analysis of copular sentences is that it predicts that a predicate nominal may have a specific referent, but (17) and (17) are odd (cf. Burton-Roberts, 1976).

(17) a. ?Fluffy is a certain cat.

b. ?Fluffy is THAT cat.

The equational analysis also fails to predict that one may not swap subject for predicate nominal at will (cf. ibidem).

(18) a. The current president is Bill.

b. ?Bill is the current president.[3]

(19) a. Fluffy is a cat.

b. *A cat is Fluffy.

There are cases where one may do both of these things, but they are not the cases at issue in most discussions of predicate nominals.

(20) a. Alex is that cat over there. [pointing to a particular actor on stage]

b. Stockholders in Daimler-Benz are also stockholders in Chrysler.

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[3] This example is rendered fully felicitous if one stresses *Bill*. So stressing *Bill* makes the sentence appropriate as a response to the question *Who is the current president?*, for which the options under consideration are all presidents. Stressing *current* also makes the example felicitous and for a similar reason. The infelicitous reading is that in which *president* bears focal stress. Under this reading what is being discussed is the nature of Bill, not which president is the current president or which president Bill is.

b'. Stockholders in Chrysler are also stockholders in Daimler-Benz.

c. The King is the man you want.

c'. The man you want is the King.

If the equational analysis can be salvaged, we at least have shown that it will not be a trivial job. Let us turn our attention, therefore, to the more popular alternative: the predicative analysis of predicate nominals.

3.1.2 problems with the predicative analysis

If the predicative analysis of predicate nominals is correct, then predicate nominals are nothing more than adjectives posing as nouns. *Lana is a baker* means “Lana is baker-like”. This would be a completely unexpected development as far as the choice functional rational implicature analysis of (in)definiteness is concerned. There is no need for any consideration of hearer choice in the predicative analysis, much less a game of reference. Since the inspirational premise of the rational implicature approach is that a unified account may be given of all the uses of all the non-quantificational determiners, patching the predicative analysis of predicate nominals onto it to account for certain uses of the (in)definite determiners would be unwelcome indeed. There are sufficient arguments against this position, however, that it too must be abandoned in the end.

One reason that some scholars have adopted a predicative analysis is that in many languages other than English that mark (in)definiteness in noun phrases a bare nominal is used in predication rather than an indefinitely marked noun phrase. Compare English *I am a student* to French *je suis étudiant*, German *ich bin Student*, and Spanish *soy estudiante*. That the predicate nominal has a different morpho-syntactic form from a referential indefinite is taken as evidence that it corresponds to a less “nominal”, more “predicative” semantic category. This evidence is not terribly compelling, however. For one thing, there are referential uses of bare nominals — see § 2.4. For another, there are

languages such as Welsh for which all semantically indefinite noun phrases are bare nominals. More importantly, there may be a historical reason that bare nominals are linked to predication distinct from any similarity of bare nominals to adjectival forms: the indefinite article in all the languages cited above has developed from the numeral one. Nominals modified by cardinal numerals are usually specific in reference. If I say that I am looking for two houses, this usually implies that there are two houses that I am looking for, not just that I am looking for some pair, any pair, of houses. I speculate that this is because if you know the specific number of objects in question, this is usually because you know the specific objects in question. Whatever the explanation, there is an association between cardinal numerals and specificity. As I showed in the preceding section, predicate nominals seldom bear markers of specificity. Thus, historically nominals modified by the numeral one would seldom have occurred as predicate nominals. When the term denoting this numeral became reanalyzed as an indefinite pronoun, there was little precedent for its occurring in predicate nominals, so the form of a non-definite predicate nominal remained the bare nominal.

The preceding paragraph is not an argument against the predicative analysis of predicate nominals; it is a counter-argument to an argument for the analysis. I know of two arguments against the predicative analysis itself. The weaker argument is that it produces an asymmetry between semantics and morpho-syntax: by morpho-syntactic criteria a different set of expressions are noun phrases than by semantic criteria. Certainly zero-derivation is a linguistic reality and one may postulate type-lifting semantic mechanisms to accommodate it, but all in all we would prefer our morpho-syntactic categories to line up with our semantic ones.

The stronger argument, as illustrated already with (11)–(13), is that the opposition between definite predicate nominals and indefinite ones seems to parallel that between definite and indefinite referential NPs. Consider (21).

(21) a. I want to be the President.

a'. I want to be a senator.

b. I want to be the lead.

b'. I want to be a member of the chorus.

c. I want to be the goalie.

c'. I want to be a wing.

If the entity the speaker wishes to be in (21) is unique in the relevant context, the predicate nominal is definite; if it is not unique, it is indefinite. This is a fully productive pattern (though (14) is a seeming exception). Suppose we devised a game in which a team had five goalies and one wing. In that case, one would speak of wanting to be *a* goalie or *the* wing. Suppose we hear someone say that he wants to be *the* baker. We can infer from this that some context is under discussion in which there is only one baker. Suppose we hear someone say that he wants to be *the* High Avocado. Though we have no idea what the High Avocado is, we know that there must be some context in which there is only one entity of this type and that this is the context under discussion. This sensitivity of (in)definite expressions to uniqueness is native to the semantics of (in)definite noun phrases and corresponds to nothing in the semantics of adjectival predicates.

In other regards (in)definite predicate nominals and (in)definite referential noun phrases are not parallel. For instance, parallelism might lead us to predict that indefinite predicate nominals could introduce to the discourse a novel entity or perhaps category of entity. But suppose you have never heard of anything called a tove and imagine that someone says to you (22).

(22) a. I want to be a tove.

b. ?I want to be a tove, and Billy wants to be the tove, too.

(22) implies that you indeed know what a tove is, and (22) simply doesn’t make very much sense. Novel sorts of entities may be introduced by predicate nominals, but their

(in)definiteness does not seem to have any bearing on the felicity with which they may do this.

(23) Now I shall teach you the parts of a tyroid.

a. This is a squidget.[4]

b. This is the demoffer.

It is the context, content, and syntactic form of (23) which indicates that novel entities are being introduced, not indefiniteness in the noun phrases naming these entities. Be this as it may, it would be desirable to assimilate the uniqueness of definite predicate nominals and the implicit non-uniqueness of indefinite ones to the semantics of (in)definiteness, and the conventional semantics of predicates does not show us how to do this.

3.1.3 the middle way: roles

Let us consider again (20), instances of predicate nominals which seem to behave like referential NPs.

(20) a. Alex is that cat over there. [pointing to a particular actor on stage]

b. Stockholders in Daimler-Benz are also stockholders in Chrysler.

b'. Stockholders in Chrysler are also stockholders in Daimler-Benz.

c. The King is the man you want.

c'. The man you want is the King.

In (20), the apparent predicate nominal is specific. In (20), the order of the expressions denoting the subject and the predicate nominal are reversible. (20) exhibits an additional peculiarity the recognition of which will allow us to unravel much of this complexity. Consider (20), (20) with the subject and the predicate nominal swapped.

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[4] This example was suggested by Matthew Dryer (p.c.).

(20) a'. That cat over there is Alex.

(20) can mean that the designated cat is named Alex. It might also be used to indicate which cat is being played by Alex in a context in which some interest has been expressed in who is playing which cat. In this list context, (20) contains a subject-predicate inversion and (20) is equivalent in semantics to (20). Otherwise, (20) is inappropriate in the context of (20), where someone simply wishes to know which cat Alex the human actor is playing. More importantly, (20) cannot be used simply to name the designated cat. Of the predicate nominal and the subject, *only the predicate nominal can be used to assign a name or role to an entity*. In (20) one specific entity is not being equated with another, but a specific entity is being assigned a specific role. A difference between reversible and non-reversible copular constructions, I postulate, is that the latter and only the latter involves the assignment of a name or role to an individual. The purpose of (20) is not to provide a new means of identifying an old individual, but to indicate that the individuals identified by two different means are the same. Henceforth, I shall restrict my use of the term "predicate nominal" to designate non-reversible copular constructions with a nominal in the predicative position; I shall use the term "equational sentence" to designate reversible copular constructions. I shall return to this distinction toward the end of this section.

Suppose that my hypothesis regarding non-reversible copular constructions is correct. From this description one may generalize that predicate nominals always designate "roles" of some sort. This analysis of predicate nominals, call it the role analysis, allows us to account for all of the peculiarities just observed. Predicate nominals cannot designate specific (ostensible) individuals, (2), (17), (17), because they never designate individuals; they designate roles. In (14) it is not that the presupposition of uniqueness is suspended, but that the choice set is a set of roles rather than a set of individuals. Though Sara Jones has two sons, there is only one relationship son-of in the set of kinship relations. Both sons of Sara Jones instantiate this unique role. Though

every moth has four wings, there is only one relationship wing-of in the set of mereological relations embodied in a moth. Each wing of the moth uniquely instantiates this role. In (15) it is not that the presupposition of existence is suspended, but that the thing presupposed to exist is the role rather than some individual instantiating it.

This last observation, that it is the role rather than the individual filling that role that exists, takes us from a linguistic to a metaphysical question. Just what is a role and in what sense can it be said to exist? (20) involves an actor on stage so it is fair to say that an assignment of a "role" to an individual is involved; but just what is the class of things that should be classified together as roles? Bringing the question back to linguistics, what other classes of expression behave like references to roles, whatever these might be, in the copular construction? Consider the instances of predicate nominals presented in (24).

(24) a. The baby is John.
b. Alex is Chairman of the Party.
c. Alex is Macbeth.
d. Alex is the type/kind/sort of man who reads other people's mail.
e. Alex is a typical/average/run-of-the-mill public servant.
f. I am the son of Sara Jones, and Charles is the son of Sara Jones, too.
g. Alex is a cat.

From these examples we can gather that the category of expressions which behave like references to roles includes references to names, roles in social organizations, roles in plays, "abstract individuals" of some sort, (24), and whatever is involved in (24). Setting aside the last category for the moment, all of these things are abstractions from concrete individuals. Names and roles in social organizations are social constructs. Roles in a play are components of the information which constitutes the play. What I have called abstract individuals are also informational constructs which are perceived inductively by observing collections of concrete individuals. I believe the commonalities among these

abstract individuals can be captured most succinctly and perspicuously in the terms of a theory of situation semantics.[5]

A situation in situation semantics may be thought of as a piece of a world, a partial model, or a partial description of a world (Barwise & Perry, 1983; Seligman & Moss, 1997).[6] A situation consists of a number of individuals instantiating a number of relations.[7] Situations are related mereologically: a subset of the elements of a situation is a smaller situation; this smaller situation describes a superset of the worlds described by the larger situation. In order to identify how the individuals in a particular situation are related by the relations present in that situation, situation semanticists have postulated "roles". A situation is fully described, therefore, by specifying the relations it instantiates, the individuals instantiating those relations, and the roles each of the individuals fills. To illustrate I will borrow an example from Seligman & Moss. Suppose Raymond cooked an omelet for Paul. In this situation, which we shall name S, the relation is cooked; the individuals related are Raymond (R), Paul (P), and the omelet (O); and the roles of these individuals are cook, diner, and dish, respectively. Seligman & Moss introduce the predicates "Rel" and "Arg" to identify the structural relations among the elements of S. 'Rel(cooked, S)' means the relation of S is cooked, for example; 'Arg(O, dish, S)', that the omelet fulfills a dish role in S. In general,

(25) σ is a situation[8] if $\exists r\ \mathrm{Rel}(r, \sigma)$ or $\exists a, i\ \mathrm{Arg}(a, i, \sigma)$

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[5] I do not mean to imply that one could not phrase this same analysis in the terms of a possible worlds semantics. I do not wish to enter into the debate as to which is the superior semantic framework for linguistics. For such debate I refer the reader to Barwise & Perry (1983). I do find a description in terms of situations to be more perspicuous and elegant, so I adopt Barwise & Perry's framework here.

[6] Within situation semantics a distinction is made between situations, which are partial worlds, and "infons", which are consistent units of information and which may be isomorphic to situations. I will ignore this distinction in my discussion, however.

[7] A situation also contains some set of properties pertaining to the situation itself, in particular, its location in time and space relative to the space-time of some larger situation. I will ignore this in my discussion.

[8] In Seligman & Moss, these rules concern infons, not situations (see footnote 6 above). My rephrasing has the result that a situation may consist of a relation without the elements related or an element and its role without any relation. If one finds that this rephrasing does too much violence to situation theory, one may rephrase all of my discussion in terms of infons rather than situations.

r is a relation if $\exists\sigma$ Rel(r, σ), and

i is a role if $\exists a, \sigma$ Arg(a, i, σ)

Another construct of situation theory is the notion of parameterized situations. Parameterization consists of abstracting over a particular element of a situation to create a more general situation describing a superset of the worlds described by the first situation. For example, suppose we represent the situation S as in (26) (Here the angle brackets represent the information encoded in Rel and Arg — they keep track of which expression denotes a relation, which an individual, which a role, and which individual instantiates which role).

(26) S:⟨cooked, ⟨R, P, O⟩, ⟨cook, diner, dish⟩⟩

We could abstract over the individuals in this situation, creating S', described in (27).

(27) S': ⟨cooked, ⟨$\dot{a}$, $\dot{b}$, $\dot{c}$⟩, ⟨cook, diner, dish⟩⟩

A variable with a superdot is Barwise & Perry's notation for a parameterized variable. A parameterized variable is like a lambda-abstracted variable, except that the abstraction is represented *in situ*: there is no lambda operator whose scope must be represented. (27) describes a situation in which somebody cooked something for somebody. Another possibility to note is that a relation might be symmetric. In this case, the individuals related would have a common role. Consider a situation in which Chris met Kim. This would be represented as in (28).

(28) S": ⟨meet, ⟨Chris, Kim⟩, ⟨meeter, meeter⟩⟩

The situation S" involves a relation of meeting, a relation which necessarily is instantiated in a group of (at least) two individuals, each of which filling the role of meeter. There is a one-to-one correspondence between the individuals related, the elements between the first set of inner angle brackets, and the roles these individuals fill in the relation, the elements between the second set.

The roles of situation semantics provide us a category of individual which corresponds to a particular description or concept, and which is associated with some semantic context which may be abstracted away from particular concrete individuals. This appears to be just what we are dealing with in predicate nominals. In each of the examples (14) and (24) the predicate nominal refers to a particular role in a particular parameterized situation. Using the notation of (26)–(28), we may represent the situations at stake in each of (14) and (24) as in (14) and (24). The ellipses in these schemata represent individuals present in the situation at hand and roles instantiated by these individuals which are not relevant to the sentence.

(14) a.⟨familial relations, ⟨$\dot{a}$, …, $\dot{b}$, …⟩, ⟨person related to, …, son, …⟩⟩

b.⟨parts of a moth, ⟨$\dot{a}$, …, $\dot{b}$, …⟩, ⟨moth, …, wing, …⟩⟩

c.⟨event, ⟨$\dot{a}$, …, $\dot{b}$, …⟩, ⟨event, …, fault, …⟩⟩

d.⟨item, ⟨$\dot{a}$, …, $\dot{b}$, …⟩, ⟨object, …, owner, …⟩⟩

(24) a.⟨here and now, ⟨…, $\dot{a}$, …⟩, ⟨…, John, …⟩⟩

b.⟨Party, ⟨…, $\dot{a}$, …⟩, ⟨…, Chairman, …⟩⟩

c.⟨$\text{Macbeth}_{\text{play}}$, ⟨…, $\dot{a}$, …⟩, ⟨…, $\text{Macbeth}_{\text{role}}$, …⟩⟩

d.⟨sorts of people, ⟨…, $\dot{a}$, …⟩, ⟨…, sort who reads other people’s mail, …⟩⟩

e.$\langle \dot{r}, \langle \ldots, \dot{a}, \ldots \rangle, \langle \ldots$, typical public servant, $\ldots \rangle \rangle$

f.$\langle$familial relations, $\langle \dot{a}, \ldots, \dot{b}, \ldots \rangle, \langle$person related to, …, son, $\ldots \rangle \rangle$

g.$\langle \dot{r}, \langle \ldots, \dot{a}, \ldots \rangle, \langle \ldots$, cat, $\ldots \rangle \rangle$

In (14), the situation consists of a woman and that woman's son, who together instantiate one of the familial relations pertaining between that woman and other individuals; the role the predicate nominal could be said to refer to is that of being a son. In (14), the situation consists of a moth and its parts, in particular, its wing; these together instantiate the relation parts-of-a-moth; the role is that of the wing. In (14), the situation consists of an event and the elements pertinent to that event. We may term the relation instantiated by these elements 'event'. The role referred to is that of the individual who may be blamed for the event. In (14), the situation consists of an object and the elements related to that object. We may term the relation instantiated by these elements 'item'. The role referred to is that of the person who owns the object. In (24), the situation consists of the individuals present here and now. The role instantiated by each individual is the role of bearing that particular individual's name. The role referred to is that of bearing the name John. In (24), the situation consists of the hierarchy of positions of authority and responsibility in the Party; the role is the Chairman. In (24), the situation consists of the events and individuals described in the play; the role is Macbeth. In (24), the situation consists of the various sorts of people one can identify; the role is the sort of person who reads other people's mail. In (24), the situation involves some relation containing an individual embodying those properties one conceives of as typical to public servants; the role is that of the public servant. (24) is just like (14). Just what abstract situation might be involved in (24) and (24) requires a little more discussion. I will return to this question shortly.

If we accept these paraphrases as descriptions of the semantics of (14) and (24), it seems that the sentences are partial descriptions of situations. Situations may themselves be regarded as partial descriptions of possible worlds. The sentences in (14) and (24), therefore, may be given a semantics in terms of a pair of situations, one a description, a sub-situation, of the other. (14) and (24) are the situations described by the sentences in (14) and (24). These are understood to be sub-situations of the situations described in (14) and (24) (I will leave unexamined in what sense a relation may be said to be a sub-relation of another).

(14) a.⟨son of mother, $\langle \dot{a}, \dot{b} \rangle$, ⟨mother, son⟩⟩

b.⟨wing of moth, $\langle \dot{a}, \dot{b} \rangle$, ⟨moth, wing⟩⟩

c.⟨at fault for event, $\langle \dot{a}, \dot{b} \rangle$, ⟨event, fault⟩⟩

d.⟨item owned, $\langle \dot{a}, \dot{b} \rangle$, ⟨object, owner⟩⟩

(24) a.⟨named John, $\langle \dot{a} \rangle$, ⟨John⟩⟩

b.⟨Party Chairman, $\langle \dot{a} \rangle$, ⟨Chairman⟩⟩

c.⟨lead in $\text{Macbeth}_{\text{play}}$, $\langle \dot{a} \rangle$, ⟨$\text{Macbeth}_{\text{role}}$⟩⟩

d.⟨sort who reads other people's mail, $\langle \dot{a} \rangle$, ⟨sort who reads other people's mail⟩⟩

e.⟨typical public servant, $\langle \dot{a} \rangle$, ⟨typical public servant⟩⟩

f.⟨son of mother, $\langle \dot{a}, \dot{b} \rangle$, ⟨mother, son⟩⟩

g.⟨cat, $\langle \dot{a} \rangle$, ⟨cat⟩⟩

Let us refer to situations such as (14) and (24), understood relative to (14) and (24), as CONTEXT SITUATIONS, and situations such as (14) and (24), as SENTENCE SITUATIONS. Sentence situations are partial descriptions of context situations.

Relative to these situation schemata we may give the ordinary rational implicature account of the (in)definiteness of the predicate nominals in (14) and (24): The predicate nominal refers to the role in the context situation instantiated by the referent of the subject of the sentence. This role is understood as chosen from the set of roles in the context situation. If the speaker believes this role to be mutually understood to be unique in this set, she marks it as definite. Otherwise, she marks it as indefinite. A definite predicate nominal indicates that the speaker believes she would be satisfied by a choice function over roles in the context situation determined by the hearer's preference; an (in)definite predicate nominal indicates that she does not believe this.

I do not know how to prove that reference to roles in a parameterized situation is necessary in a semantic description of these sentences, but one can give such a description and it seems complete and intuitive. Moreover, the particular framework of situation semantics is not necessary for such a description; I have merely found it convenient. Reference to roles is endemic in linguistic theorizing. Consider only Role and Reference Grammar (Foley & Van Valin, 1984; Van Valin, 1993; Van Valin & LaPolla, 1997) and Theta-Theory in Government and Binding (Chomsky, 1993; Haegeman, 1994;). In all of these theories, roles identify how individuals participate in a relation, situation, or event. Reference to roles allows us to give a unified account of non-reversible copular sentences: the predicate nominal refers to a role in a parameterized situation; the subject, to an individual which is the value of that parameter in some situations of that type. The subject and the predicate nominal refer to different semantic types of individual, so their order cannot be reversed.

This brings us back to the distinction between reversible copular sentences, which I term equational sentences, and non-reversible copular sentences (with a nominal in the

predicative position), which I term predicate nominals. I have claimed that only the latter involve reference to roles. I question which this distinction raises is the semantics of the copula, which at face value is the same word in both constructions. Perhaps one might say that the copula indicates that the properties identified by the second constituent are exhibited by the individual identified by the first constituent. For predicate nominals, these properties are the properties of the role. For the second nominal in equational sentences, these properties are the properties of the individual known under the second name or description. I will leave this issue for other studies.

Situation theory presents us with a convenient framework for describing roles, a category of entity postulated by many other linguistic theories. If we posit that predicate nominals identify roles, we find that intuitively plausible situation-theoretic descriptions of the states of affairs involved in nominal predications predict whether the predicate nominals should be definite or indefinite. Because this analysis allows us to account for the sensitivity to uniqueness exhibited by predicate nominals, it is superior to the predicative analysis. Because this analysis does not allow predicate nominals to refer to specific ostensible individuals, it accounts for the seeming suspension of the ordinary presuppositions of definite noun phrases when these are used as predicate nominals, and it predicts that subject and predicate nominal noun phrases cannot be exchanged, it is superior to the equational analysis.

We may keep the role analysis of predicate nominals even if we reject the rational implicature analysis of (in)definiteness. One of the advantages of the rational implicature analysis, however, is that it gives a unified semantics for phenomena which other theories treat distinctly. The role analysis of predicate nominals allows us to unify one more use of (in)definiteness marking with the rest already explained by the rational implicature analysis. We may maintain the hypothesis that there is a single semantic analysis for all (in)definiteness marking.

3.2 GENERICS

There is another class of uses of (in)definite noun phrases that present problems for the rational implicature account similar to those presented by predicate nominals. These are noun phrases with "generic" reference, illustrated in (29).

(29) a. The man who gives his paycheck to his wife is wiser than the one who gives it to his mistress.

b. A ten-pound dog learns to respect a twenty-pound cat.

c. Evolution has taught <u>ten-pound dogs</u> to respect <u>twenty-pound cats</u>.

d. <u>The armadillo</u> has few close relatives.

The problem with generic noun phrases, like that with predicate nominals, is that it is not clear what the referents are over which a game of reference could be played. In (29), it seems that there are four, or perhaps six, people at issue, but in what sense can these people be chosen among, and how does the hearer know that these are the choices in the game? And whatever the reasoning involved in (29), reference to both choices is definite, so why are the animals at question in (29) indefinite? How do the two scenarios differ? As for (29), it seems like a reasonable statement; perhaps even true; but how is it that evolution can effect any change in a plurality of dogs? The same problem surfaces more pointedly in (29). One would expect the relatives of an armadillo also to be armadillos, so how is it that one can refer to *the* armadillo in this sentence? In short, do these noun phrases refer? If they do, what do they refer to? If they don't, is it at all possible to assimilate them to the rational implicature account of referential (in)definite noun phrases?

Problems with referentiality aside, it seems there is a bewildering variety of (in)definite generics. Definite singular noun phrases, indefinite singulars, and bare plurals may all have generic reference. Furthermore, when we mix and match noun phrases and

predicates we find that not all (in)definite noun phrases are equally acceptable with a given predicate.

(30) a'. A man who gives his paycheck to his wife is wiser than one who gives it to his mistress.

a". Men who give their paychecks to their wives are wiser than those who give them to their mistresses.

b'. ?The ten-pound dog learns to respect the twenty-pound cat.

b". Ten-pound dogs learn to respect twenty-pound cats.

c'. ?Evolution has taught a ten-pound dog to respect a twenty-pound cat.

c". ?Evolution has taught the ten-pound dog to respect the twenty-pound cat.

d'. ?An armadillo has few close relatives.

d". Armadillos have few close relatives.

In the discussion that follows, I will explore the hypothesis that all the variety of (in)definite generic noun phrases and their idiosyncrasies arise from two mechanisms: reference to kinds and universal generalization from arbitrary instances or individuals. This hypothesis will allow us to assimilate generic noun phrases to referential (in)definites with very little novel theoretical machinery, all of which I will argue is independently required.

The discussion will proceed by the following stages. First, in § 3.2.1, I will discuss the nature of genericity — what varieties of genericity must be postulated and how they differ from universal assertions. Then, in § 3.2.2, I shall discuss reference to kinds as an account of definite singular generics. I shall follow this in § 3.2.3 with a discussion of indefinite singular generics, arguing that they may be viewed in terms of universal generalization. I shall extend this discussion in § 3.2.4 to include bare plurals, arguing that the respects in which they differ from indefinite singulars derive wholly from the semantics of pluralities. Finally, in § 3.2.5, I shall consider a class of

(in)definites which seem to blur the boundary between definite and indefinite generics: aphoristic definites.

3.2.1 the nature of genericity

3.2.1.1 generics versus universals: normativeness and the tolerance of exceptions

As Schubert & Pelletier (1987) have put it, there is a naive view of generics and a range of nuanced, sophisticated views. The naive view is that a generic assertion is truth conditionally a universal assertion. Thus, (31) should be truth-conditionally equivalent to (31), and these truth conditions should be expressible roughly as in (32).

(31) a. A rottweiler is a danger to cats.

b. Every rottweiler is a danger to cats.

(32) $(\forall x\text{: rottweiler})(x \text{ danger.to.cats})$

It takes little rummaging in linguistic curiosities to find examples falsifying the naive view. Consider demented or imbecilic rottweilers, toothless, limbless, or paralyzed rottweilers; newborn or senile rottweilers; not to mention cat-loving, passive, or timid rottweilers. Rottweilers in all these categories are harmless to cats and hence falsify (31), yet in spite of all of these counterexamples, (31) may still be true. Consider further a situation in which all the children born in a particular town happen to be right-handed. The laws of probability being what they are and there being as many towns as there are on this planet, it is not terribly unlikely that some such town exists. Nevertheless, the fact that the children of this town all happen to be right-handed is a mere statistical accident. Let us imagine that this town is Rainbow Lake, Alberta. (33) would seem to be a

felicitous universal generalization about Rainbow Lake, while the generic (34) is now

infelicitous.[9]

(33) All children born in Rainbow Lake, Alberta, are right-handed.

(34) ?A child born in Rainbow Lake, Alberta, is right-handed.

Examples such as these have been taken to indicate that the generic is only felicitous when the assertion concerns some inherent property of the generic noun (q.v. Goodman, 1955; Lawler, 1973; Dahl, 1975; *inter alia*). There's nothing about the children born in Rainbow Lake, Alberta, which compels them to be right-handed, so (34) is odd. This normative character of generics is related to two other properties: the requirement that certain generics refer to "well-established" kinds and their eschewal of contextual restrictions.

3.2.1.2 ad hoc versus well-established kinds[10]

One distinction between definite and indefinite generics is their relative acceptability with ad hoc versus well-established kinds (q.v. Vendler, 1967; Nunberg & Pan, 1975; Carlson, 1977b; Dahl, 1985; Krifka et al., 1995). Consider (35) and (36).

(35) a. A blue bottle shields its contents from reddish light.
b. ?The blue bottle shields its contents from reddish light.

(36) a. ?A milk bottle is experiencing a resurgence in popularity in the United States.
b. The milk bottle is experiencing a resurgence in popularity in the United States.

It seems that indefinite noun phrases allow one to predicate things of ad hoc kinds, (35), whereas definite noun phrases do not, (35). On the other hand, definite noun phrases are

[9] This is an adaptation of a very similar example in Schubert & Pelletier (1987).
[10] For the moment, the reader may understand my comments relative to an intuitive understanding of the term kind. I will explore just what constitutes a kind in greater detail in § 3.2.2.1.

suitable for referring to conventional, well-established kinds, (36), in contexts where indefinite noun phrases are not suitable, (36).

Two observations are in order here. First, I will not explore just what it is that makes a kind well-established. Some such distinction is at issue in contrasts such as (35) and (36) and it is recognized in the literature (q.v. Krifka et al., 1995). It appears to be the case that well-established kinds correspond to those knowledge of which forms part of the common ground in the speech community. It appears to be true, at least as an approximation, that such kinds are conventionally recognized in the sense of Lewis (1969). All that is necessary for our purposes is that some such distinction is relevant in cases such as (35) and (36). Second, the problem with (36) appears to have something to do with specificity. Consider the examples in (37).

(37) a.*<u>Any politician</u> is experiencing a resurgence in popularity.

b.?<u>A politician</u> is experiencing a resurgence in popularity.

c. <u>A particular politician</u> is experiencing a resurgence in popularity.

(37) necessarily concerns a nonspecific politician and it is thoroughly infelicitous. Under its nonspecific reading, (37) is also infelicitous, but it is fine under the specific reading. (37) necessarily concerns a specific politician, and it is always felicitous. The felicitous specific readings of these examples are not generic, however. It seems that indefinite generics allow one to predicate things of ad hoc kinds, but they are necessarily non-specific, whereas definite generics refer to (particular) well-established kinds.[11]

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[11] This is only an approximate description of the facts, because (i) involves what would normally be called non-specific reference, yet it is fine.

(i) The odds are that at any given moment <u>some politician</u> will be experiencing a resurgence in popularity.

Let me suggest that what distinguishes the acceptable referents from the unacceptable ones in (36) and (37) is arbitrariness. *The milk bottle* in (36)b refers to a non-arbitrary variety of bottle. The specific politician in the acceptable reading of (37)b is not an arbitrary politician: that is in the nature of *a politician* referring specifically. The same is surely true of (37)c. In (i), there is some non-arbitrary relation between moments and politicians which are experiencing resurgences in popularity: at a given moment it is not just any

If generic reference is only reference to kinds, then we have an explanation of the normative character of generic reference, illustrated in (33)–(34). The properties of kinds, and hence those properties which may be predicated of kinds, are those which are inherent in them, not those which independently happen to obtain of all of their members: kinds are "intensional". Unfortunately, whether or not this is a true description of kinds as they are reflected in natural speech, it is not so obvious that it can stand as an explanation of the normative character of indefinite generics. However they refer, indefinite generics do not refer to kinds at all. This is demonstrated by their infelicity with predicates of kinds, such as *go extinct* and *invent*, (38).

(38) a. Edison invented the/*a lightbulb.[12]

b. The/*a dodo is extinct.

I will explore below how it is possible for indefinites to allow predication of kinds without referring to them when I examine indefinite generics in greater detail.

3.2.1.3 generics and discourse restrictions

Another property of generics which might explain their normative character is their eschewal of discourse restrictions. Consider (39), adapted from Krifka et al. (1995).

(39) There were lions and tigers in the circus ring.

a.*A lion had a bushy mane.

b.*The lion had a bushy man.

c.*Lions had bushy manes.

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arbitrary politician that is experiencing a resurgence in popularity, but some politician particular to that moment. This suggestion presupposes that *a milk bottle* of (36)a, *any politician* of (37)a, and the non-specific reading of *a politician* in (37)b refer arbitrarily. I am jumping the gun a bit in bringing up this analysis here. It will be further discussed in § 3.2.3. *et seqq.* and § 6.4.

[12] Note, the "taxonomic" reading of *a lightbulb*, where it is equivalent to *a variety of lightbulb*, is not at issue here. For discussion of this reading, see § 3.2.1.4.

d. All the lions had bushy manes.[13]

e. Every/each lion had a bushy mane.

The universally quantified sentences (39) and (39) are felicitous and might even be true under the most natural interpretation: that the only lions in question are those which were present in the circus ring. In contrast, the generic sentences (39) do not have a felicitous reading whereby they make a generic assertion only of this restricted subset of lions.

The reader could justifiably be a little confused at this point. Generics are said to allow exceptions yet eschew discourse restrictions. Aren't discourse restrictions just a way of admitting a large class of exceptions? I shall expand a bit on this distinction. The exceptions admitted by generics are admitted because they belong to a tacitly disregarded subtype — lions give live birth (of course, male lions don't); horses sleep three hours a day (of course, they sleep more if they're sedated). Exceptions admitted by universals are admitted because they don't belong to some ad hoc class — all the books in the room in which I currently sit are written in English; if I translated myself fifteen feet east, this would no longer be true. As far as the universe is concerned, books not present in this room where I am sitting may be a subtype of books just as male lions may be a subtype of lions. As far as speakers of English are concerned, however, only the latter deserves to be called a subtype.

This being said, note that indefinite generics do sometimes allow ad hoc restrictions corresponding to small sets of entities.

(40) At State U. these days <u>a student</u> really wants to get an A.

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[13] But compare (39)d to (i).

(i) *All lions had bushy manes.

I will not concern myself with this difference, as it seems to depend on the semantics of universal determiners as much as it does on (in)definiteness. For some speculative discussion of extending the rational implicature account to include universal determiners, see § 7.1.

(41) Students at State U. are more competitive now than back in Isabelle's day.

Such generics may even be tacitly restricted by discourse.

(42) Let me tell you about State U. these days. A student doesn't have the time to shilly-shally around between majors. If he hasn't decided the focus of his studies by his second year, he won't graduate with his class.

Even with indefinite generics it is still the case the restrictions do not sound entirely felicitous, and the closer one gets to describing a set with specific members, the less felicitous they sound.

(43) ?At State U. this year, a student really wants to get an A.

(44) *In the circus ring last night, a lion had a bushy mane.

I will examine discourse restrictions further and attempt to come to some conclusions in my discussion of indefinite generics below.

Regardless of how this property of generics is explained, note that it might be appealed to to explain the normative character of indefinite generics. Any universal truth which only happens to be true of the extension of a particular predicate necessarily only holds in the actual world (and some only extensionally describable set of possible worlds). Otherwise, it would not just *happen* to be true; rather, there would have to be some law-like regularity characterizing the worlds in which it was true. This only extensionally describable set of possible worlds is a tacit restriction on the generic, and if generics eschew tacit restrictions, then generics in assertions of non-normative properties will be infelicitous.

3.2.1.4 types of generic noun phrases

In all of the discussion that follows, it should be borne in mind that there are at least four understandings of generic assertion which must be disambiguated. I shall refer to these as indefinite generics, taxonomic generics, synecdochical generics, and characterizing sentences. All four are illustrated in (45).

(45) a. A duck is an efficient swimmer. [indefinite generic]

b. Few mammals are able to thrive in Antarctica. [taxonomic generic]

c. This pencil used to be manufactured in Chicago. [synecdochical generic]

d. Dick used to collect stamps. [characterizing sentence]

The last three types of generic assertion are largely independent of each other and the type of noun phrase serving as an argument to the assertion. A taxonomic generic involves quantification over a domain all of whose individuals are types in a taxonomy. In (45), for instance, one is comparing the properties of various species of mammals and saying that only certain ones of them can thrive in Antarctica. The taxonomic generic is distinguishable largely because it occurs in a context in which taxonomic distinctions are being discussed. Synecdochical generics refer to kinds by way of reference to instances of the kind.

The only variety of noun phrase which cannot be used generically in either the taxonomic or synecdochical sense is proper nouns, though indefinite noun phrases resist interpretation in either of these senses without additional modifiers. Consider (46).

(46) a. ?A mouse is extinct.

b. A particular variety of mouse is extinct.

c. ?Clem invented radios.

d. Clem invented certain varieties of radios.

e. ?Ford manufactures a car in Clem's driveway.

f. Ford manufactures a particular one of the cars in Clem's driveway.

g. ?Ford manufactures cars in Clem's driveway.

h. Ford manufactures certain of the cars in Clem's driveway.

Proper nouns, with a few exceptions, such as *Homo sapiens* or *humanity*, rigidly designate particular concrete individuals, not kinds. Synecdochical generics refer to kinds indirectly via reference to instances of the kinds, so it would seem that proper nouns could refer generically in this sense. I suspect three things contribute towards their unacceptability as synecdochical generics. First, most proper nouns are names of people, and any person belongs to so many conventional kinds that it would be unclear which was indirectly referred to were the speaker to attempt a synecdochical generic reference with a proper noun. Second, a difference between common nouns and proper nouns is that only the first always refers via reference to a type; *this cat* contains a noun designating the type *cat*, whereas *Fluffy* does not. Therefore, there is a straightforward association between concrete individuals named via ordinary noun phrases and the types they can designate synecdochically, whereas there is no straightforward association for proper noun phrases. Third, it is simply a convention of the use of proper nouns that their intended referent is that which they designate rigidly, and this convention cannot be overridden. This last reason may follow from the first two: because proper nouns are not well suited for synecdochical generic reference and there are other means to refer to the kinds they might refer to synecdochically, they are not used synecdochically, and so there is no conventional expectation that they might be used this way in any case. I will discuss synecdochical generics further in my discussion of generic bare plurals. As to why indefinites resist taxonomic or synecdochical generic interpretation, note that either interpretation most often involves a specific reading of the indefinite. The acceptable taxonomic and synecdochical indefinites in (46), for instance, are modified by or otherwise contain the so-called adjectives of specificity — *particular* and *certain*. If these

modifiers are removed, the sentences sound less felicitous. As I discuss below in the section on bare plural generics, § 3.2.4, the specific reading of indefinites is usually dispreferred; hence, indefinites should resist taxonomic or synecdochical interpretation. Let us turn to the fourth class of putatively generic statements, characterizing sentences.

Characterizing sentences involve propositions predicating some habit, potential, or inclination of an entity. (47) illustrates a variety of characterizing sentences.

(47) a. Harvey likes Paris.

b. Those dogs used to dig holes under our fence.

c. Dogs like bones.

d. This machine crushes oranges.

These sentences are alike in that they predicate an "eternal" property of some individual or individuals. This is not a sufficient condition for these sentences to involve generic predication, however. Generic sentences are those which predicate some property of a kind rather than an ordinary individual, and if we consider only the nature of the predication for the subject, of the sentences in (47), only (c) falls into this category.

In the discussion that follows, I will argue that definite generics are a variety of taxonomic generic and that indefinites and free choice *any* are indefinite generics. I will not have a great deal to say about characterizing sentences per se; though I will present a theory of their semantics in my discussion of aphoristic generics. Synecdochical generics will only be of interest as an alternative theory of bare plural generics to mine.

3.2.2 definite generics[14]

I have postulated that a speaker marks a noun phrase as definite because she would be satisfied by a choice function over the extension of the nominal determined by the hearer's preferences, which means she believes the hearer has a winning strategy in the game of reference played over this extension. As I described in § 2.4, this means that the interlocutors mutually know the set of possible referents sufficiently that each may apply some principle to select the same referent the other will select, and each knows this or may be brought to infer this given the information that the other knows it. This means that each interlocutor views the referent as unique under some description and each knows that the other views the referent so. It is sufficient for a noun phrase to be definite, therefore, if its intension has a unique extension. If common nouns may be used to refer to kinds instantiated by all those entities fitting their intension — if the intension of a common noun may pick out either this kind or the instantiations of this kind as its extension —, then every common noun is associated intensionally with a unique referent, namely, its kind. Presuming kinds should be included among the individuals in the domain of a complete model for a natural language, one should be able to refer to them directly with definite noun phrases, and moreover, all direct reference to such kinds should be definite.[15] I posit that this is the explanation for all definite generics aside from aphoristic definite generics.

It is essential to my argument that kinds be recognized as a variety of individual in the naive metaphysics of natural language. The first goal in my argument concerning definite generics will thus be to show that we must include such individuals in our

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[14] There is a class of definite generic noun phrases which follows a completely different pattern from those noun phrases usually referred to as definite generics. These are definite aphoristic generics. They are expressions such as *the man who gives change to beggars*. Their most salient feature is the restrictive relative clause which they usually contain. I will discuss them in § 3.2.5.

[15] I am differentiating between direct and indirect reference to kinds because I believe that there are ways to predicate things of kinds without referring to them directly. Similarly, you may predicate something of me

linguistic semantic models. I will then, in § 3.2.2.2, enumerate the ways in which definite generics are distinctive from other generics and I will show how all of these follow from an analysis of definite generics as involving direct reference to kinds.

3.2.2.1 what is a kind?

3.2.2.1.1 the kind term test

What sort of thing is a kind? Is it a sort of thing at all? If the only objects of discussion deserving to be called things are tangible objects which may physically participate in a causal chain, then it isn't clear that kinds are things. If things are those objects which people commonly categorize as things, then kinds clearly are things of a sort. Since all that should concern us in linguistic investigations is folk metaphysics, let us pursue the second understanding of kinds and the general test it suggests: a kind is anything that we may without discomfort describe as a kind. Let us see how far this test can carry us.

I presume that we wish to say that all the examples in (48) involve reference to kinds if anything does.

(48) a. Thomas Edison invented the lightbulb.

b. Hydrogen has the lowest atomic number of any element.

c. *Homo sapiens* arrived in Australia around 40,000 B.C.E.

d. Humans evolved from lemurs.

If kinds are at the very least those things which we call kinds, let us see what happens when we call the entities in (48) kinds.

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by saying that all linguists are thus and so without having directly predicated this of me. I will argue that all indefinite generics and that aphoristic definite generics predicate things of kinds in this manner.

(49) a. ?Thomas Edison invented the kind lightbulb.

b. ?The kind hydrogen has the lowest atomic number of any element.

c. ?The kind *Homo sapiens* arrived in Australia around 40,000 B.C.E.

d. ?The kind humans evolved from the kind lemurs.

The sentences in (49) do not sound felicitous. Does this mean that these entities are not kinds? I think not. Sentences of the form of those in (49) are acceptable if we use terms designating subvarieties of kinds rather than *kind* itself.

(50) a. Thomas Edison invented the variety of electrical contrivance we know as the lightbulb.

b. The element Hydrogen has the lowest atomic number of any element.

c. The species *Homo sapiens* arrived in Australia around 40,000 B.C.E.

d. Humans as a species evolved from a species of lemurs.

Note that not everything may be identified in this way as a subkind.

(51) a.*When I turned the corner I saw the kind/type/variety/class/species/sort/phylum/genus/taxon/etc. known as street vendors hawking its wares.

b.* A kind/species beaver is an amphibious rodent.

The kind term test thus does distinguish among referents. Note also that there is no restriction on the use of terms such as *kind* in the construction *a kind of X* (cf. Lakoff, 1973; Kay, 1984; Aijmer, 1984; Rios, 1997).

(52) a. The lightbulb is a kind of electrical contrivance.

b. A beaver is a kind of amphibious rodent.

c. I saw a kind of street vendor standing on the corner hawking his wares.

I argue that (52) does not demonstrate a peculiar property of kinds, but only that the term *kind* and its like have a secondary usage as a hedge indicating the partial or questionable

adequacy of a description. If we wish to use terms such as *kind* as a test for kindhood, we must be careful that the term is not serving merely as a hedge in the examples of interest to us.

3.2.2.1.2 why kinds

Model-theoretic semantics generally portrays words as having very concrete meanings. Within the model there is a set of individuals, and the meaning of every linguistic expression is some set-theoretic object founded on these entities. From the point of view of model theory, for kinds to be things would be for them to be among the individuals in the model. If kinds are individuals, they don't seem to be individuals of the same sort as Clive and Margot, Bob and Alice. Kinds are related to a set of tokens the same way a common noun is. The model-theoretic interpretation of common nouns is as sets of individuals. Why shouldn't we simply say that kinds are semantically equivalent to common nouns? This is a position which has been adopted by Chierchia (1982), for instance. I do not take this position because, for one thing, the evidence from usage I will present below shows that kinds are their own metaphysical category, whereas common nouns are merely a linguistic category. For another, the nature of reference with natural kind terms appears to be non-descriptional, just as is reference with proper nouns, a class of linguistic expression which uncontroversially denotes individuals. I shall argue that kinds are a distinct class of individuals whose properties are those which distinguish instances of the kind.

Given the kind term test of kindhood, what properties may we discern as attributable to kinds? It appears to be a heterogeneous group.

(53) a. The rabbit (as a species) consumes 20,000,000 metric tons of grass a year.[16]

b. ?The rabbit (as a species) weighs 100,000 metric tons.

c. The lion is, as diurnal species go, particularly fond of sleep.

d. ?The species lion sleeps till noon most days.

e. Recent archeological evidence shows that (the species) *Homo sapiens* arrived in the New World in 20,345 B.C.E.

f. ?*Homo sapiens* opened a new dry cleaner on Hertel Avenue yesterday.

g. (The species) *Homo sapiens* walks about on two legs.

h. ?(The species) *Homo sapiens* walks about, as of the moment I am writing this sentence, on roughly 12 billion legs.

Some collective properties are attributable to kinds (a), and some are not (b, h). Some properties common to average or stereotypical tokens of a kind are attributable to the kind (g), and some are not (d). Some properties attributable to particular members of a kind are attributable to the kind (e) and some are not (f). I won't attempt to distill these properties down into a general essence of kinds, but it is useful to observe that kinds may have properties, and that these properties are not necessarily to be identified with those of either the collection of tokens of the kind, average tokens of the kind, or particular tokens of the kind. This is significant because it shows that as we speak of kinds they form a class of objects qualitatively different from other objects. The distinctive properties of kinds as we speak of them are evidence that kinds as a class deserve a distinct role in our linguistic metaphysics.

Evidence that one should not persist too long in one's skepticism regarding postulating kinds as a variety of individual comes from other abstract objects similar to kinds. A partial list of such objects is: notions, ideas, fads, diseases, plays, books, movies, social organizations and institutions, philosophies, religions, modes of thought, and

[16] I have done no rigorous fact checking of the claims made in my examples.

Platonic entities, such as circles and the number seven. Keep in mind that we are not discussing the *real* nature of these entities but the naive metaphysics that is revealed in how we speak of them. Note also that I am not seeking to show that kinds are necessarily distinct from all of these other categories, but that if our patterns of speech require us to postulate any of these as varieties of individuals in our semantic model, it is hardly any stretch to postulate kinds as well.

Another argument along the same lines as this is that the most intuitive account of noun phrases involving the modifiers *typical*, *average*, *prototypical*, *canonical*, and so forth requires recourse to abstract individuals of some sort (see § 3.1.3). It would be awfully convenient to say that *the average American* refers to the average American; that *the typical lemon* refers to the typical lemon. I will have more to say about "typicality" noun phrases, as I will term them, in § 3.2.5. If we have abstract objects to model typical individuals, why not abstract objects to model kinds as well?

Both of the preceding arguments in favor of postulating kinds as individuals are only suggestive at best. The strongest argument remains. Let us return to the question of whether kinds are things.

In arguing against the descriptional theory of proper names, Saul Kripke, Hilary Putnam, and others have examined examples such as (54) (Kripke, 1972; Putnam, 1970, 1975).

(54) Aristotle was the teacher of Alexander.

If (54) is true and is by convention the descriptional content of the expression *Aristotle*, then it should be impossible for historians to discover that in fact someone other than Aristotle was the teacher of Alexander. If it were discovered that Alexander never existed, this would entail that Aristotle never existed. Neither of these conclusions agrees with our intuitions about *Aristotle* and like terms. It cannot be that (54) merely contains the wrong description, because the same argument would follow whatever description

one assigned to the word. As an alternative to the descriptional theory of proper names, Kripke has offered the causal theory, which holds that an initial baptism and a chain of instruction connects an expression to its referent. I will not examine the causal theory of reference in any depth.[17]

The particulars of the causal theory of reference aside, note that natural kind terms, too, cannot be said to refer via any description. Consider gold, a typical kind in discussions such as this. Our knowledge of gold has not remained constant throughout history. We have used it for different purposes, acquired it from different sources, and had different beliefs about its physical nature. If we held that natural kind terms referred via some description, we would have to conclude that when we refer to *gold* we are no longer referring to the same substance our medieval forebears were interested in when they used the term. Since this is patently absurd, we must accept some non-descriptional theory of reference for kinds, and this suggests that reference to kinds is of the same nature as reference via proper names. To conclude this line of reasoning, if terms for kinds refer in the same manner as proper names and proper names designate individuals, then terms for kinds must designate individuals. Ergo, the model by which we define the semantics of kind-referring terms must contain individuals which are kinds.[18]

3.2.2.2 what kinds can do for us

Let us take it as granted that a complete semantic model for a natural language must contain a subdomain of individuals identifiable as kinds. How does this bear on an account of definite generics? To start with, if a kind can be identified with a common

[17] I propose, though I will not spend time defending, a game-theoretical theory of reference along similar lines: proper names serve as evidence allowing different individuals to coordinate their choice of referent, whatever they might believe about the referent. To say that proper names have no descriptional content is to say that two individuals speaking the same language and given as evidence a proper name need not share any particular beliefs about its referent in order to coordinate their choice on it.
[18] For another phrasing of this argument, see Krifka, et al. (1995).

noun, it is unique under that description. The kind three-toed sloth classifies everything which can be called a three-toed sloth and excludes everything else.

Consider the contrary: imagine that there is a second kind named three-toed sloth; this kind accords with the convention of naming kinds in that it corresponds to the descriptive content of *three-toed sloth* when this expression is used to identify an ostensible individual, and it has as its instantiations the extension of that phrase; but this second kind is a distinct individual from the first kind three-toed sloth. One can conceive of such a state of affairs in the abstract, but outside of this metalinguistic context such a model for the concepts relating to three-toed sloths has little use. Ordinarily, predicating things of kinds allows one to predicate things of instantiations of these kinds; in ordinary usage, speaking of kinds, conceiving of kinds, is only useful because it facilitates our discussion and understanding of instantiations of kinds. But in our case of the two kinds three-toed sloth no property may be predicated of either kind that cannot be predicated of the other. Generalizing from this case, there is never any use in ordinary discourse for differentiating kinds with the same intensions and instantiations. It is not a logical but a functional property of conventional kinds that they should be unique.

There is no way to individuate a kind apart from its instantiations and the intension which identifies them, so a kind named by a particular common noun is always unique under that description. Since a kind is unique, there could be only one choice function over the extension of the nominal naming it; so the speaker would have to be satisfied with the choice function determined by the hearer's preferences; so reference to the kind would have to be definite.

The more desirable result of analyzing definite generics as referring to kinds is that we can then explain the distinctive properties of these generics, the respects in which they differ from other generics and from universally quantified noun phrases. To this end we must demonstrate the following: A kind is unlike a universally quantified noun phrase in that it admits exceptions. A kind is unlike a universally quantified noun phrase in that

its properties are normative. Whereas a universally quantified noun phrase may correspond to an ad hoc class of individuals and an indefinite generic to an ad hoc kind, a definite generic refers to a well-established kind. And whereas a universally quantified noun phrase may correspond to a contextually restricted class, a generic eschews contextual restriction and a definite generic does not accept a contextual restriction at all.

A kind admits exceptions because when one predicates things of a kind one is doing so in comparison to other individuals of the same type. When one says that individuals of a certain kind express a certain property, the hearer understands that individuals of that kind express that property only to the extent that kinds of that type may express that property. If I say guppies give live birth, I am understood to be characterizing guppies relative to other species. It is common knowledge that no species is such that all of its members are constantly giving birth. I need not mention, therefore, that guppies give live birth only in ordinary situations of guppies giving birth at all. I need not mention that male guppies do not give live birth, nor immature or senescent guppies, sterile female guppies, guppies who have consumed an abortifacient, and so on. In characterizing one species relative to another, one is interested in how the ordinary state of affairs for one species differs from the ordinary state of affairs for the other. All of the exceptions which definite generics admit are things which one finds in non-ordinary states of affairs for individuals of the type in question.

That predication of kinds involves comparison among individuals of a common type derives from the nature of characterizing sentences, not the nature of kinds. If I say *Paula shops at the co-op*, I am understood to have characterized Paula relative to other people. Paula shops at the co-op, and perhaps Troy shops at the A&P. If I say *Homo sapiens* is an omnivore, I am understood to have characterized *Homo sapiens* relative to other species. *H. sapiens* is an omnivore, and perhaps *H. stultus* is an insectivore. Again, this property of characterizing sentences is not demonstrably necessary, but one can see that it is well-motivated. We can infer that our interlocutors need not be informed of

certain facts; they can infer them. Those inferable facts which are relevant to the discourse context are just what define the common type of the individuals being compared in a characterizing sentence. Wherever Paula shops, the hearer may assume that she is a person of the sort one expects to find in the situation under discussion, and (let us say that) one's default assumption regarding such people is that they do not always shop, nor even always shop in the same place when they shop. Nevertheless, if Paula ordinarily shops at the co-op, this is a noteworthy characteristic which may be described in a characterizing sentence. If we assert that Paula characteristically shops at the co-op, this does not force us to abandon the default assumption for people of her type that she does not always shop, nor always shop in the same place.

To the extent that they may be used to predicate properties of the instantiations of their kinds, generics, including definite generics, allow the predication only of properties which are normative among these instantiations of their kinds. This quality of generics is illustrated in the contrast in (55).

(55) a. ?The lion has tartar on its molars.

b. The lion has a tufted tail.

(55) may be as true as (55) as a generalization about lions, but it concerns a property which we find hard to view as inherent in the nature of lions, so we find it hard to accept as a felicitous generic assertion. Definite generics allow only normative predications, for the most part, because the properties of kinds that correspond to properties of their instantiations are, for the most part, only those properties that distinguish these instantiations as instantiations of the kind. This is so because kinds only exist as a category to help individuals categorize useful generalizations about the world. It is useful to be able to recognize lions, thus people speak of certain salient properties of lions, such as their sporting a tufted tail, as properties of the kind lion. If one person imparts to another that the lion has a tufted tail, the other will infer not only that this is true of lions

generally, but that it is a useful thing to know about lions. Contrarily, it matters little to people that lions have tartar on their molars; therefore, this sort of information is not predicated of the kind lion.

I include the qualification ‘for the most part’ in the preceding paragraph because some properties of particular instantiations seem to redound to the “credit of their kind”. This is the “avante garde” generic, so named in Krifka et al. (1995). (56) illustrates this use.

(56) The rabbit arrived in Australia in 1848.

We take this to be a plausible true statement about the kind rabbit, although it is only certain instantiations of the kind which arrived in Australia at this date. In contrast, we do not accept (57), because (57) concerns a property of instantiations of the kind rabbit which we do not conceive of as relevant to our understanding of the kind.

(57) ?The rabbit dug some new warrens on the eastern outskirts of Perth in 1956.

I will not attempt to catalog or explain all the properties of kinds which are reflected in generic statements involving reference to kinds. I conjecture that the normative restrictions on the use of generic expressions merely delimit the class of properties one may ascribe to kinds. I will leave more profound analysis of these properties to others.

That definite generics refer only to well-established kinds derives from the non-descriptional nature of kind names (see the preceding section). The bald eagle is not bald, and this expression would still denote the same kind of bird even if these turned out not to be eagles. For the same reason, we cannot assume that something called the short bald eagle would be a short version of the bald eagle. Since kind names refer in the same manner as proper names (Kripke, 1972; Putnam, 1970, 1975), kinds can only be mutually identifiable if they are conventionally recognized, which is to say, well-established.

If definite generics can refer only to well-established kinds, a fortiori they cannot refer to a contextually restricted set of individuals. On the one hand, not every ad hoc set of individuals can correspond to a distinct well-established kind, since the establishment of a kind requires the establishment of a convention naming that kind. On the other hand, a discourse context exists only within that discourse; there is no opportunity outside of that discourse to establish the necessary convention of naming.

I have expended many words arguing that definite generics be understood in terms of reference to kinds. This might mislead one into thinking that this is a revolutionary viewpoint. To the contrary, this viewpoint has often been defended, though it is by no means the only analysis going. For proponents of the kind reference treatment of generics, see Carlson (1977a), Chierchia (1982). Alternative analyses view generics as involving a covert quantifier or modal of some sort, default logic, prototypes or stereotypes, and so forth (q.v. Krifka et al. 1995 and references therein). I seek in this dissertation only to show that the kind-reference analysis is compatible with usage and the choice functional rational implicature treatment of (in)definiteness in general.

3.2.3 indefinite generics

I have argued for the position, not a hugely revolutionary one, that definite generics involve reference to kinds. Because kinds are necessarily unique, the use of definite articles in reference to kinds requires no special explanation. But if this argument holds, one cannot refer indefinitely to a particular kind. What, then, is the nature of indefinite generics? Definite and indefinite generics are superficially very similar, yet our account of definite generics stands also as an argument that indefinite generics cannot work by the same mechanism.

In the section that follows, I will discuss indefinite generics. I shall first, in § 3.2.3.1, present the distinguishing characteristics of indefinite generics. We shall find that they are not truly so similar to definite generics after all. In particular, they can be

used to predicate things of ad hoc kinds and they cannot be used with predicates of kinds. I shall then, in § 3.2.3.2, present a theory of the mechanism underlying indefinite generics, namely, universal generalization. Universal generalization is a commonplace rule of inference in natural logic (see, e.g., McCawley, 1993) which allows one, given a property necessarily true of an arbitrarily chosen member of a set, to infer that this property holds of all members of that set. It is the nature of an arbitrarily chosen member of a set that it will be indefinite, hence generics based on universal generalization will be indefinite. I will show how certain of the properties of indefinite generics follow from the nature of universal generalization and the cooperative nature of the game of reference. One property, their eschewal of predicates of kinds, I will not discuss until the following section, § 3.2.4, where I present a theory of bare plural generics.

3.2.3.1 the nature of indefinite generics

To recapitulate, a generic noun phrase is one that has a quasi-universal interpretation but which is not truly universal. Generic noun phrases cannot be interpreted as identical to universally determined noun phrases because they admit exceptions and they require certain extraneous restrictions. In these essential respects, indefinite generics are perhaps identical to definite generics. Compare the sentences in (58).

(58) a. Every cow gives milk. FALSE
b. A cow gives milk. TRUE
c. The cow gives milk. TRUE
d. Every lion has tartar on its canines.
e. ?A lion has tartar on its molars.
f. *The lion has tartar on its molars.

Examples (58) illustrate that both definite and indefinite generics, unlike universals, admit exceptions: males cows, calves, and various other sorts of cow do not give milk.

Examples (58) illustrate that both varieties of generic are normative: even assuming all lions have tartar on their molars, (58) and (58) are infelicitous, whereas (58) is not; the (in)definite generics may be used to predicate only law-like generalizations.

Examples (58) and (58) are meant to approximate the Rainbow Lake, Alberta, examples, (33) and (34). I will consider the possibly varying felicity judgments for these examples shortly. Note that I could not use the Rainbow Lake, Alberta, example itself. Consider (59).

(59) ?The child born in Rainbow Lake, Alberta, is left-handed.

This example might be said to be bad because, as we have discussed, definite generics cannot designate ad hoc kinds and the child born in Rainbow Lake, Alberta, is not a conventional kind.[19] By this same example we can see the major point of divergence between definite and indefinite generics: the latter but not the former allow ad hoc kinds. The second point of divergence, which I will discuss when we get to bare plural generics, is that definite but not indefinite singular generics can serve as the generic argument of predicates of kinds.

Examples (58) and (58) differ in my judgment in their relative acceptability. Perhaps (58) is unacceptable, but this might simply be a problem of contextualization. Imagine that Moe the lion has tartar on his canines. Flo the gamekeeper notices this and expresses astonishment, to which Joe the veterinary dentist responds, “It’s nothing to worry about, —” (58)/ (58). Both of these sound acceptable to me, whereas I cannot

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[19] Matthew Dryer has pointed out to me a case in which *the child born in Rainbow Lake, Alberta* seems to designate a conventional kind.

(i) The child born in Rainbow Lake, Alberta, is at an educational disadvantage compared to one born in Edmonton.

I believe, however, that the definite noun phrase that begins this sentence is better analyzed as a definite aphoristic generic. For one thing, *born in Rainbow Lake, Alberta* is a restrictive relative clause, one of the hallmarks of aphoristic generics. For another, the pronoun *one* in the parallel noun phrase, *one born in Edmonton*, clearly refers to an ordinary child, not to a kind of child. I will argue in § 3.2.4 that aphoristic generics involve reference to ordinary individuals, such as ordinary children, in arbitrary situations.

contextualize (58). We have just provided an account for the constraints on predications of definite generics: they refer to kinds, which are purely linguistic constructs; as such, only those properties which are conventionally used to distinguish their instantiations from the instantiations of other kinds may be predicated of them. Since it appears, from (58) and (58), that definite and indefinite generics diverge in the nature on the constraints on predication that involve them, there must be a different explanation for the normativeness of indefinite generics.

Another point which bears mention at this juncture, as I believe it may reveal the explanation for the normativeness of indefinite generics, is that generics, definite and indefinite alike, do not accept discourse restrictions. Consider (60).

(60) I was at the State U. convocation, yesterday.

a. Every student wore the school colors.

b.*The student wore the school colors.

c.?A student wore the school colors.

The universal statement accepts the discourse restriction to just those students present at the convocation, but both generic statements are infelicitous to one degree or another. I believe they are infelicitous to different degrees because the indefinite generic will accept a discourse restriction if the context is suitably encouraging. Consider (61).

(61) Let me tell you about State U. Sheesh! They really treat the students like dirt! A student who fails to register on time is fined $60!

There are contexts in which definite generics seemingly accept discourse restrictions as well, though they are somewhat harder to come by; (62) is an instance.

(62) You don’t want to work for Megacorp, let me tell you. It won’t be good for your self-esteem. What a sweatshop! The man on the floor works and works and the foreman just picks his teeth and laughs!

I will discuss discourse restricted definite generics further when I discuss aphoristic generics in § 3.2.5.

To summarize, I shall examine four issues in my treatment of indefinite generics: their admittance of exceptions, their admittance of ad hoc kinds, their normative character, and their relative eschewal of discourse restrictions. I shall begin my discussion with a statement of my theory of generic indefinites: universal generalization.

3.2.3.2 universal generalization

By universal generalization, if one can truthfully predicate a property of a member of a set without having any idea as to that member's identity, then one may predicate that property of all members of the set. It seems to be empirically true that we may refer to members of a set without having any idea as to their identity. *An arbitrary member of set A*, for example, is an expression which refers to such a member of set *A*. This expression is indefinite: we must explain why reference to arbitrary individuals is indefinite whether or not we use universal generalization to explain generic indefinites. Given this explanation, we have an explanation also for why indefinite noun phrases may have universal force. This is the outline of my explanation of generic indefinites. I shall now examine the elements of this argument in greater detail.

The inference rule called universal generalization says that anything which one may say a priori is true of an arbitrarily chosen member of a set is necessarily true of every member of that set. In other words, if I say something is true of whichever member of a set someone else chooses by any process of choice, I am saying that there is no way someone can choose a counterexample within that set. If there does not exist a member of the set for which the assertion is false, then it is true for all members of the set. Put this way, universal generalization sounds abstruse but in fact it is so commonplace that we do it instinctively without realizing that we have applied any rule of inference at all. For

instance, below I list three pieces of dialog to which one instinctively applies universal generalization and the particular generalization for each case.

(63) This is the trick. He gives you a deck of cards, fanning them so that neither he nor you can see their faces. You pick one of the cards from the fan at random and note its suit and number. He gathers the cards together into a stack. You place your card in the middle of the stack. He says, with delay and flourish, "you have chosen the three of spades!" And he's right.

⇒ (the magician is psychic or is otherwise surreptitiously perceiving one's choice, one cannot truly chose freely, or) all the cards one can choose are threes of spades

(64) While you were fixing the rodent damage to the garden, did you happen to replant one of the tomatoes? If so, I hope you got a good look at the root mass. I'm curious as to the identity of the grubs creeping about down there.

⇒ all the tomato plants have grubs on their roots

(65) The city has rerouted traffic around this street. It's the potholes. They're horrible! You drive over one and it's off to Firestone for a $100 repair.

⇒ all of the potholes are such that everyone who has driven over them has damaged one of his or her wheels

I have deliberately avoided noun phrases which are said to be generic or universal to show that it is a nonlinguistic process of reasoning rather than any particular linguistic form which triggers seemingly effortless universal generalization in these cases. All of these examples could be rewritten with indefinite articles, however.

This is how it goes. …

(63) You pick a card and the magician tells you without looking that it's the three of spades.

(64) You pull up a tomato plant and you find grubs on its roots.

(65) You drive over a pothole on this street and you damage a wheel.

The first of these three we might not call a generic indefinite but the second two we would. It would require some argument to support a claim that these receive their universal sense from covert linguistic devices when by appearances they work no differently from (63)–(65).

There are more clearly nonlinguistic instances of universal generalization, if (63)–(65) are not convincing. Universal generalization is quite commonly implicit in mathematical statements. For instance, setting aside the restriction, the Pythagorean theorem is almost always stated as $a^2 + b^2 = c^2$ rather than as $(\forall a, b, c)(a^2 + b^2 = c^2)$. No doubt the quantifierless formulation is taught because it is easier for students to understand. Moreover, it is general across all mathematical theorems that they are stated without any overt universal quantifier. Consider the quadratic equation — $x = (-b \pm \sqrt{b^2 - 4ac})/2a$ — or any of the familiar equations from physics — $E = mc^2$, $f = ma$, $E = \frac{1}{2}mv^2$, and so on. While the average individual may not know any of these formulas, she quite commonly knows in general how they are phrased and is aware in general of what they mean. Most importantly, she is not flustered by the absence of any universal quantifier. One might hypothesize that the average person is not applying the rule of universal generalization in understanding these formulas, but instead has learned a special rule for the interpretation of mathematical sentences to the effect that there is a covert universal quantifier present which binds all free variables, but considering (63)–

(65), the simpler hypothesis is that the free variables are taken to be assigned values arbitrarily and that the universal import of these statements arises from universal generalization from these arbitrary values.

This is not to argue that free variables and indefinite generics are exactly the same thing. We interpret an equation containing free variables to be universal because we have learned to interpret free variables as indeterminate: they do not have a specified value because it does not matter what their value is; whatever you choose for their value, the equation will be true. I mention these examples because I wish to illustrate further that universal generalization is familiar. If we know this rule and are able to apply it to understand equations with free variables, it is likely that we apply it on occasion in reasoning about linguistic expressions of indeterminate reference.

Returning to the Pythagorean theorem, consider how it might be stated in plain English.

(66) the Pythagorean Theorem:

For <u>any/a given/an arbitrary/an arbitrarily chosen right triangle</u>, the sum of the squares of the lengths of the sides equals the square of the length of the hypotenuse.

The reader knows that this is a statement true of all right triangles because he knows the rule of universal generalization. In this statement of the Pythagorean theorem we have a variety of indefinite noun phrases all designating an indeterminate right triangle. There is no universal determiner, yet this statement makes a universal generalization.

In the phrasing of the Pythagorean theorem in (66) no simple indefinite noun phrase is used, but (67) would work as well.

(67) the Pythagorean Theorem:

In <u>a right triangle</u>, the sum of the squares of the lengths of the sides equals the square of the length of the hypotenuse.

There is no reason to believe this statement is valid by a different process of inference than was used to understand (66). The simplest explanation is that it too is an instance of universal generalization. Furthermore, (67) appears to involve a generic indefinite. There is no reason to believe (67) is not a generic indefinite. (67) has its quasi-universal force by virtue of universal generalization, so the simplest hypothesis is that all generic indefinites work by the same process and thus all are instances of universal generalization.

Moreover, we do not need to be satisfied with negative evidence to believe that (67) involves a generic indefinite. There is no reason to believe (67) is not a generic indefinite, but there is also a positive reason to believe that it is a generic indefinite. Namely, (67), like less controversial generic indefinites, admits exceptions. In a Reimannian space curved like a sphere, the Pythagorean theorem is false.[20] (67) is a valid generalization, but the equivalent using a universal determiner is not.

Why should indeterminates be indefinite? This is a question requiring some rumination. In fact, given our current rational implicature theory of (in)definites it seems the presupposition of this question is false: indeterminates should not be indefinite. The reason this is so is that when the speaker "refers" to an arbitrary individual she does not intend to refer to any particular individual.

So long as the speaker intends to refer to some particular individual one may infer from $f_{+\mathbf{X}}$ that $f_{\mathbf{X}} = f_{\mathbf{S}}$: the speaker will only be satisfied by a choice function determined by the preferences of a particular individual so long as that individual would choose the referent she intends. Thus, one may infer from $f_{+\mathbf{H}}$ that $f_{\mathbf{H}} = f_{\mathbf{S}}$. But what if the speaker intends to refer to an arbitrary individual? It stands to reason that she would be satisfied with whatever individual anybody chose as a value for her referring expression. More

[20] Imagine a huge triangle with one vertex at the North Pole of the Earth and the other two on the Equator separated by one quarter of the Earth's circumference. The angle of every vertex of the triangle is 90˚. It is a right triangle. Every side of this triangle is roughly the same length as the others:

particularly, it stands to reason that she would be satisfied by whatever individual the hearer chose. So long as the speaker is referring to an indeterminate, it seems her referring expression must be definite!

This conclusion is clearly false. Definite reference to an arbitrary individual is infelicitous.

(68) *The arbitrary member of set *A* is even.

The implication of (68) is that one may distinguish arbitrary and non-arbitrary members of *A*, which one cannot do. The fault in the reasoning of the preceding paragraph is that the hearer is attempting to choose a referent for the (in)definite expression as a solution to the game of reference. He means to choose as a referent only whatever the speaker has chosen. The speaker's indicating to him that she would be satisfied by his choice will be taken to mean that she has a particular referent in mind, not an indeterminate. The implication of $f_{+\mathbf{H}}$, therefore, is that $f_{\mathbf{S}}$ is defined, and thus the referent of a definite noun phrase is always understood to be non-arbitrary. The speaker would not be satisfied with a choice function determined by the hearer's preferences so long as the hearer is choosing within the game of reference. An arbitrary individual must be marked as indefinite.

Let me now restate my argument regarding universal generalization. There is a rule of inference which appears to be valid in reasoning about all manner of phenomena: universal generalization. It is important that this law be valid for all manner of phenomena, because as long as it is nonlinguistic, linguists can use it in their theories for free: to use universal generalization to explain indefinite generics involves no additional stipulation; it requires only that reference to arbitrary individuals be indefinite. And reference to arbitrary individuals is indeed indefinite. Since I need to postulate this mechanism and given this mechanism and the evidence so far adduced I do not need to

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$a = b = c \neq 0$; $a^2 = b^2 = c^2$; $a^2 + b^2 = 2c^2$; $\therefore \neg(a^2 + b^2 = c^2)$

postulate any other, I will proceed on the hypothesis that universal generalization is the explanation of all indefinite generics.

3.2.3.3 why exceptions

We now have an explanation for the quasi-universal value of indefinite generics, but we have no account of their admittance of exceptions. Why is it valid to say the square of the hypotenuse of a right triangle is equal to the sum of the squares of the other sides when this is only true in a Euclidean space? Because there is an unspoken restriction to the effect that the only right triangles that will be considered are those drawn in a Euclidean space. Since it does not occur to most people first introduced to the Pythagorean theorem that there could be anything other than Euclidean spaces, it would be unproductively picky to demand that this restriction be overtly stated. The same argument justifies all unspoken restrictions on universal generalization: the goal in the game of reference is for the two interlocutors to come to a common understanding of what is being communicated. If a restriction on the set of referents the speaker intends is mutually inferable, she need not mention it; the game will proceed as if she had, because the hearer will not choose a referent he can infer the speaker will not choose.

This is essentially the same mechanism that allowed definite generics to admit exceptions. In the case of definite generics, it is understood that one characterizes a kind, in most cases, by characterizing the behavior of that kind in ordinary instances of the situation in question. In ordinary instances of giving birth, it is the female of the kind that gives birth. Therefore, when one characterizes how a kind gives birth one is understood to be characterizing only how the female of that kind gives birth. One may use indefinite generics to characterize groups which correspond to no conventional kind. Still, characterizing sentences involving indefinite generics describe a class of situation. When one describes how a duck eats, one is describing those situations in which some duck eats; when one describes how a cicada finds its mate one is describing those situations in

which some cicada finds its mate. Again, certain properties of these situations may be inferred from one's background knowledge of the world — it is only conscious ducks that eat, for instance, and only sexually mature cicadas that seek their mates. As with characterizing sentences involving reference to kinds, characterizing sentences involving reference to arbitrary individuals by convention concern ordinary situations. Just what is an ordinary situation is determined by a game of reference.[21, 22]

One difference between definite generics and indefinite generics is that only the former may have the avant garde use.

(56) The rabbit arrived in Australia in 1848.

(69) A rabbit arrived in Australia in 1848.

From hearing (56) one understands that the first rabbits to arrive in Australia arrived in 1848. From hearing (69) one understands only that some rabbit arrived in Australia at that time. Certain extraordinary situations characterize kinds in addition to the ordinary ones. Indefinite generics cannot refer to these extraordinary situations, because the individuals involved in these situations are not arbitrary but particular.

3.2.3.4 ad hoc kinds

We have now shown how universal generalization may imply a universal proposition; and we have shown that were one to describe the basis for universal generalization one would use an indefinite noun phrase, potentially one indistinguishable from an indefinite generic. From this and Occam's razor we should postulate that indefinite generics are nothing other than descriptions of the basis for universal generalization. Furthermore,

[21] Implicit in this sentence is the admission that a complete theory of generics requires a theory of default reasoning. For a summary of such theories with particular attention to their application to generics, see Pelletier & Asher (1997).

from the nature of the game of reference we can account for the first property of indefinite generics: their admittance of exceptions. The second of the properties of indefinite generics to be accounted for is why they, unlike definite generics, admit ad hoc kinds. The reason is simply that they do not generate their quasi-universal sense via reference to conventional kinds. An indefinite generic may be constructed for any sort of thing that can be designated with an indefinite noun phrase. This is not to say that there are no pragmatic restrictions on the use of indefinite generics. We will get to these shortly. There is no inherent reason, however, why universal generalization should fail to apply in any set.

3.2.3.5 normativeness and contextual restrictions

The normative character of indefinite generics may be restated as the proposition that indefinite generics can be used to state generalizations only over intensionally defined sets. *A bird has a beak* is acceptable because, by the intension of *bird*, all birds in any relatively normal possible world will have a beak — the intension of *a bird* associates this expression with a set of individuals in every possible world, and this set of individuals is a subset of the individuals with beaks in relatively normal possible worlds. *A child born in Rainbow Lake, Alberta, is right-handed* is unacceptable, even if it is true in this world, because in most relatively normal possible worlds it is false — the intension of *a child born in Rainbow Lake, Alberta* associates this expression with a set of individuals in every possible world, and this set of individuals is not a subset of the right handed individuals in relatively normal possible worlds. The normative characteristics of a class of individuals are just those that are true in all relatively normal possible worlds.[23] This is not an explanation of the normative character of indefinite

[22] This account of generic indefinites' admittance of exceptions leaves unexplained why this cooperativeness does not hold for universal determiners as well. For a speculative discussion of this issue, see § 7.1.
[23] For more on the notion of relatively normal possible worlds, see Lewis (1973) and Kratzer (1977, 1981).

generics, but a different characterization of it that will more quickly lead to an explanation.

Now consider contextual restrictions. To say that a quasi-universal expression has a discourse restriction is to say that it is meant to hold only for the members of some set which is salient in discourse, not the complete extension of the expression. For example, *everyone* in (70) is contextually restricted; it does not concern all of humanity, but only those people at the party.

(70) You should have been at the party! Eileen and Helen were there — they were so happy! — and Frank — oh, lots of people! Everyone had such a good time!

One thing one should note about (70), and contextual restrictions in general, is that they concern an extensionally defined set. In (70), the tacit restriction is to whoever happened to be at the party, not to whoever happened to be happy, although that is a salient property of some people in the context. In general, universals are tacitly restricted to whoever happens to be present in the context under discussion without regard to properties that might further subdivide this set or otherwise subdivide the domain of individuals across possible worlds. It follows that the restriction of indefinite generics to intensionally defined sets also produces their eschewal of discourse restrictions, as these are only extensionally defined, or at least only extensionally definable. These two characteristics of indefinite generics, that they are normative and that they cannot be implicitly restricted by discourse, amount to the same thing.

Unfortunately, the restriction of indefinite generics to intensionally defined sets does not follow from the properties of universal generalization. We may define the set *A* to contain the members *Hank*, *Carol*, *Lewis*, *Nancy*, and *Clem*. If I now assert that an arbitrarily chosen member of *A* is right-handed, one may infer from this that all members of *A* are right-handed, even though we know only an extensional definition of *A*. Again the rational implicature account of indefinite generics is in difficulties.

Normally in discussions of generic noun phrases, generics are compared only to universals. Generics may have implicit exceptions, subtypes of individuals they do not refer to; universals may not. Universals may have an implicit restriction, referring only to particular individuals; generics may not. We will simply accept the behavior of universal noun phrases as given. We have provided an explanation for the behavior of definite generic noun phrases. We have begun to provide an explanation for the behavior of indefinite generic noun phrases: they involve universal generalization from arbitrary instances. We face a dilemma, however: if indefinite generics involve generalization from arbitrary instances, the same mechanism which allows them to have implicit intensional exceptions — the game of reference — should allow them to have implicit extensional restrictions. In order to better understand this phenomenon and arrive at an explanation, I believe it is valuable to consider generic and universal noun phrases in an expanded theoretical context.

Consider table 1.

	implicit	
det	extensional restriction	intensional exceptions
$\forall_0$	−	−
$\forall_1$	+	−
$\forall_2$	−	+
$\forall_3$	+	+

table 1: universaloids

Each row in this table represents a different variety of universal-like determiner. Let us call these determiners “universaloids”. The semantic interpretations of universaloids may be conceived of as functions from pairs of sets to truth values. If all the members of the first set, the extension of the nominal, are members of the second set, the extension of the predicate, then the universaloid maps the pair of sets to true, otherwise it maps them to false. This is merely a description of the universal quantifier in a higher order predicate calculus. Universaloids are distinguished, however, by how and whether they admit

exceptions. Universaloid $\forall_0$ admits no exceptions of any kind. It is precisely as described above, a simple universal quantifier. Universaloid $\forall_1$ admits implicit extensional restrictions but no implicit intensional exceptions. It is an ordinary universal determiner like *all*, *every*, or *each*. Universaloid $\forall_2$ allows no implicit extensional restrictions but it does admit implicit intensional exceptions. It is essentially a generic determiner. Universaloid $\forall_3$ admits both implicit extensional restrictions and implicit intensional exceptions. It is the variety of generic determiner we might expect a generic indefinite article to be. Neither the first nor the last universaloid occurs as a determiner in English. Let us consider why not.

$\forall_0$ does not occur for two reasons. First, implicit exceptions are too valuable to do without. They allow interlocutors to speak efficiently by exploiting each others' common knowledge and skill at the game of reference. Consider (71) and (72). The first is a generic sentence which does not apply in a large number of cases. The second is an attempt to make the same assertion, this time mentioning all of the exceptions explicitly.

(71) A duck swims with webbed feet.

(72) Those ducks which are not mentally or physically incapacitated or distracted in such a way as to make ordinary duck motions difficult or detrimental to their survival and/or reproductive success, on those occasions when to do so would be likely to be beneficial to their survival and/or reproductive success and they are able in effect to perceive this, frequently swim with their own webbed feet when they find themselves moving below a certain relative velocity on the surface of a body of liquid water appreciably larger than the transverse cross-section of their bodies at a level roughly an inch below the juncture of their neck to their body,

the said volume of water being deep enough that the duck could not simply walk on the aforementioned webbed feet.

(72) demonstrates how awkward it is to attempt to do without implicit exceptions of any sort, and if one looks closely one finds that (72) is still full of implicit exceptions. Nothing is said about fuzzy membership in the category duck, for instance, or the category of activities that are classified as swimming. The second reason $\forall_0$ does not occur is that it is always possible to create the semantic effect of $\forall_0$ by failing to exploit the implicit relaxations of the limitations allowed by another universaloid.

$\forall_1$ and $\forall_2$ are both valuable in different ways. $\forall_1$ allows one to make a truly universal generalization over the members of a (tacitly extensionally restricted) set. To adopt an ad hoc notation, $\forall_1$(person)(happy) would mean that everyone present in some context was happy. They might not cohere as a class of people across possible worlds; their analogues in other possible worlds might not be happy; they may not be all the people in the actual world; but all of them in this world are happy. $\forall_2$ allows one to make a truly universal generalization over the subvarieties of a (tacitly restricted) kind. $\forall_2$(person)(happy) would mean that all people, with certain types excepted, are happy in all relatively normal possible worlds. To condense things into a suggestive but oversimplifying slogan, $\forall_1$ creates an extensional generalization; $\forall_2$, an intensional generalization.

The universaloids are partially ordered by strength. If any member of the extension of the nominal is not a member of the extension of the predicate, it is a counter-example, and $\forall_0$ maps the pair to false. Both $\forall_1$ and $\forall_2$ allow a certain number of such instances while mapping the pair to true; for $\forall_1$, such an instance may fall outside the

implicit extensional restriction. For $\forall_2$, such an instance may be an implicit intensional exception. If $\forall_0$ maps the pair to true, therefore, both $\forall_1$ and $\forall_2$ will map it to true. $\forall_0$ is unilaterally stronger than both $\forall_1$ and $\forall_2$. Both $\forall_1$ and $\forall_2$ are in turn unilaterally stronger than $\forall_3$. An instance might be a counter-example to $\forall_1$, falling within the implicit extensional restriction, yet still be an implicit intensional exception, thus $\forall_3$ would map the nominal and predicate to true. Likewise, an instance might be a counter-example to $\forall_2$, failing to be an implicit intensional exception, yet falling outside the implicit extensional restriction, thus $\forall_3$ would again map the nominal and predicate to true. In fact, $\forall_3$ is weaker than an existential quantifier. Imagine a situation in which all the individuals in the implicit extensional restriction are implicit intensional exceptions. Consider (73). Dyspeptic cows are implicitly excepted and the sentence is implicitly restricted to the cows in a particular field, all of which are dyspeptic.

(73) $\forall_3$ cow eats habanero peppers.

The restriction in (73) is non-trivial: some cows are at issue. The implicit exceptions are non-trivial: when one characterizes how a group of organisms eats, one is usually understood to be characterizing organisms with an ordinary appetite. Yet the extension of the subject nominal in (73) is null. Still, no member of the extension of the nominal fails to be a member of the extension of the predicate: the assertion is true of every cow in question, so (73) is true. If the subject nominal in (73) were existential, however, (73) would be false.

I suggest the reason no determiner behaves like universaloid $\forall_3$ is that the latter is too weak. To predicate something of a noun phrase with the understanding that the latter

is to be interpreted as determined by universaloid $\forall_3$ is to violate the Gricean maxims of quantity and relevance; one cannot be held to having asserted anything at all. Indefinite generics in fact do have the semantics of $\forall_3$, but by the maxims of quantity and relevance they are always pragmatically strengthened so that they have the interpretation of $\forall_2$. Definite generics, on the other hand, have the semantics of $\forall_2$ by convention. This difference is demonstrated by the greater felicity of contextually restricting indefinite generics. To my ear, there is a gradient difference in unacceptability among the implicitly extensionally restricted (74) and (75) and the implicitly intensionally restricted (76). (74) strikes me as quite odd and awkward. (75) is nonsensical. (76) is simply false.

(74) ?I went to the zoo yesterday with Clarence and Clarice. There were many apes in the primate house. The baboons particularly interested Clarice. <u>A (=every) baboon</u> ate overripe mangos and acted foolish.

(75) *I went to the zoo yesterday with Clarence and Clarice. There were many apes in the primate house. The baboons particularly interested Clarice. <u>The baboon</u> ate overripe mangos and acted foolish.

(76) <u>Every mature horse</u> gives milk.

In some cases an implicit contextual restriction is quite acceptable with an indefinite generic, as I illustrated with (61), repeated here.

(61) Let me tell you about State U. Sheesh! They really treat the students like dirt! <u>A student who fails to register on time</u> is fined $60!

To summarize, indefinite generics are normative in character because they eschew contextual restrictions. They eschew contextual restrictions because otherwise they are too pragmatically weak to serve a communicative function.

3.2.3.6 what is an arbitrary individual?

I am not the first to recognize the possibility of accounting for genericity via universal generalization from arbitrary individuals. In recent times, however, with the exception of Fine (1985), who was not interested in natural language semantics per se, this account has been mentioned only to be dismissed (Krifka et al. 1995; Pelletier & Asher 1997). This dismissal has been justified by the counter-intuitive logical properties of arbitrary individuals as these are usually discussed. Arbitrary individuals have been taken to be individuals who express all and only the common properties of a set of conventional individuals. This leads to such things as arbitrary integers which are neither even nor odd yet either even or odd, arbitrary people who have hair but no hair color, and distinct yet indistinguishable arbitrary numbers. In spite of these counter-intuitive results, Fine manages to construct a theory of arbitrary individuals adequate to allow their admittance into logical proofs. His theory involves the postulation or omission of certain mechanisms, such as no direct translation of disjunction, which are distasteful to natural language semanticists, and thus Pelletier & Asher (1997) continue to find universal generalization an inadequate treatment of genericity. Note, however, that all of the objections raised to arbitrary individuals are objections to such individuals as an ontological category. This is not the status of arbitrary individuals in the rational implicature account. An arbitrary individual is not an individual from the arbitrary domain, but an individual whose identity is unknown. Arbitrary individuals are thus distinguished by their epistemological rather than their ontological status. Arbitrary individuals in the rational implicature account have the same ontological category and epistemological status as the referents of *tomorrow's weather*, *a stranger's best friend*, or

the moment the last living being on Earth perishes in the heat of the expanding sun. These have the same ontological status as the referents of *today's weather*, *your*, *the reader's*, *best friend*, and *the moment you finish reading this clause*. Their epistemological status differs from that of these conventional entities only in that our knowledge of them is more than usually incomplete. Whereas ontologically arbitrary individuals may be odd birds indeed, epistemologically arbitrary individuals are necessary in any semantic theory that purports to account for the patterns of cognition, because we undoubtedly have only partial knowledge, at best, of anything.

3.2.3.7 alternative accounts of indefinite generics

I have given an account of indefinite generics which derives their generic sense from a special application of the general meaning I have given for indefinite determiners. I have not reviewed alternative analyses of indefinite genericity. Out of consideration of space I will not provide here an exhaustive summary of alternative theories, but only argue against their weaknesses. I direct the reader's attention to the excellent reviews of work on genericity provided in Schubert & Pelletier (1987), Krifka et al. (1995), and Pelletier & Asher (1997). I will provide a more detailed argument against opposing analyses in my discussion of bare plural generics, as these have received the bulk of the theoretical attention since Carlson (1977a).

There are two general approaches to genericity and, by extension, to generic indefinites. Genericity is viewed as a phenomenon in the semantics of either the noun phrase or the verb phrase. To my knowledge, whichever the locus chosen, in all extant analyses it is assumed that the genericity arises from polysemy in this locus. Either the indefinite article is polysemous, sometimes acting as a generic quantifying determiner; or the simple tenses are polysemous, sometimes contributing, in effect, a covert generically

quantifying adverb to the sentence. I argue against both on grounds of economy.[24] Note first that if either form is polysemous, this is an odd sort of polysemy, because the same pattern is repeated across many languages. It also suggests one should be able to find languages with indefinite articles and/or simple tenses but in which the article never had a generic sense or the simple tenses never had a characterizing sense, but rather there was a special generic indefinite article or a characterizing verb form. I do not know of any language with a special generic determiner. There are languages with a characterizing verb form, but in these languages this form is not necessary in characterizing sentences. (77) illustrates a characterizing sentence in Swahili using the habitual morpheme {hu-}; (78) illustrates the equivalent sentence using the present tense morpheme {-na-}. These examples are taken from Krifka et al. (1995). Additional examples maybe found in Dahl (1985, 1988, 1995).

(77) Wanawake hu-fanya kazi ya kuchokoa pwesa.
women HABIT-do work of catching squid
'The women (generally) do the work of catching squid.'

(78) Wanawake wa-na-fanya kazi ya kuchokoa pwesa.
women 3p-PRES-do work of catching squid
'The women catch squid' or 'The women are catching squid.'

There does not seem to be any evidence for polysemy in the indefinite article, and the occurrence of languages such as Swahili is not evidence for polysemy in the simple tense verb forms, since the present tense seems to exhibit the putative polysemy even in languages with a distinct habitual form.

[24] See Horn (1985) and Gazdar (1979) for similar arguments.

One of the arguments for the polysemy of the simple present tense in English has been its use in characterizing sentences with no other potentially generic operators. For example,

(79) Bob visits Mary at the beauty parlor..

(80) The King coughs when Prince Ferdinand walks by.

(81) The teacher stands over there while we buy lunch.

Suppose, however, that the simple present tense may indicate only that the speaker chooses not to indicate an absolute or relative interval of occurrence for the event in question. This sense would be compatible with the event's being indeterminate in time, which would be sufficient basis for universal generalization. Evidence for this analysis is provided by the variety of uses of the present tense. In addition to its use in characterizing sentences, it may serves as a narrative past, (82), an eyewitness present, (83), or a "future of appointment", (84).

(82) The Gauls retreat behind the ramparts of their town. Caesar surveys their efforts at defense with arrogant scorn.

(83) The pitcher winds up... he throws — Casey swings — Strike three!

(84) The bus departs tomorrow at 2:00 p.m. and arrives in Cleveland on Thursday at 8:00 a.m.

It may be useful to observe that the very same verb form may be used in any of these four senses, past, present, future, and characterizing.

(85) a. Caesar runs to his horse, mounts, and wheels to face the charging Gauls.

b. Hank runs! He slides! Safe!

c. Sarah runs in the first event. I hope you'll be there to watch.

d. Cleo runs for exercise.

The theory I am advocating is not that the present tense has no temporal meaning. It seems that the present tense always denotes an interval in time contemporaneous with the situation under discussion. What is present within the discourse, however, is completely flexible relative to the actual present. Moreover, if the present time of the discourse is indeterminate, the present tense is indeterminate in temporal reference. If the temporal reference of a particular use of the present tense is arbitrary, this justifies universal generalization and hence a characterizing sense.

Another argument against the polysemy of the simple present tense is that the other simple tenses have an equivalent reading. Compare the uses in (86).

(86) a. Caesar suffered from epilepsy.

b. Ramiro tells lies.

c. (Henceforth,)Heloise will play the piano in our band.

(86) and (86) are characterizing sentences no less than (86). To my knowledge, all languages which make otherwise analogous temporal distinctions allow characterizing uses of these tenses. If all of the tenses are polysemous across all languages, we can only stipulate this as an unmotivated cross-linguistic universal. It might be that simple tenses license the introduction of a covert generic adverb — an unspoken *usually* or *ordinarily* —, but this only complicates our stipulation. Alternatively, we can say that a universal and independently required nonlinguistic rule of inference, universal generalization, interacts with semantically simple linguistic forms to produce genericity abstracted over individuals and/or situations. We should prefer the second hypothesis as it involves fewer stipulations. And even if we insist that the simple tenses are polysemous, one *can* describe arbitrary situations using the simple tenses. Consider (87) and (88).

(87) If one observes an arbitrarily chosen instance of hunting behavior among lions, one finds that the male eats the largest portion of the kill.

(88) If one could have observed an arbitrarily chosen instance of hunting behavior among velociraptors, one would have found that the pack killed by evisceration.

We should prefer the hypothesis that characterizing sentences work by universal generalization from arbitrary instances, therefore, because the alternative involves redundant explanations. The possibility of this treatment of characterizing sentences is in fact noted as an advantage of the arbitrary individual account of generics in Pelletier & Asher (1997); though they dismiss the account on other grounds, as discussed in § 3.2.3. above.

3.2.4 bare plural generics

The next problem I will address is that of bare plural generics. These are perhaps the most common form of generic reference in English, so one of the primary goals of any treatment of English generic noun phrases will be a treatment of the bare plural.[25] I illustrate this usage in (89).

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[25] It would be desirable in this account to compare bare plurals to plural noun phrases with the determiner *some*; such noun phrases are often considered to be plural indefinites. I will not do this, because I do not wish to examine the semantics of *some* in great detail. Note that singular *some* NPs are unlike singular indefinite NPs in many respects. Among these, *some* has no generic use, and unlike the indefinite article, it behaves to a certain extent like a positive polarity item.

(i) a. I didn't see a cat.
b.*I didn't see some cat.

The absence of any generic use for plural *some* NPs tells us little. Like singular *some* NPs, though, and unlike either singular indefinite NPs or bare plurals, plural *some* NPs behave like positive polarity items.

(ii) a. I didn't see cats.
b.*I didn't see some cats.

To show that plural *some* NPs are the plural equivalent of indefinite singular NPs, therefore, one would have to show that plural *some* has a distinct semantics from singular *some*, and that plural indefinites, which can only be called indefinites if indefinites are a semantic class, pattern differently from singular

(89) a. Boys will be boys.

b. I like doughnuts.

c. Leopards are rare in North America.

d. Giant ground sloths are extinct.

e. Marconi invented radios.

In the literature, these sentences are all treated as felicitous. See, in particular, Carlson (1977a), wherein it is postulated that bare plurals refer basically to kinds and that they refer to pluralities or stages of individuals only by a variety of type shifting. Examples (89) and (89) are crucial to this hypothesis because they are taken to show bare plurals as arguments of predicates of kinds, *to be extinct* and *to invent*.

Carlson presents an array of reasons for believing that bare plurals are not merely the plural equivalent of singular indefinites. I am arguing that in most cases the bare plural is in fact a plural indefinite. I will address most of Carlson's arguments only briefly and in their most general form. I feel that adequate counterarguments to most of them are presented in Gillon (1990)[26] and I refer the interested reader there. The one issue that I will address which I feel is not adequately treated in Gillon (1990) is why bare plurals seemingly can refer to kinds.

3.2.4.1 why bare plurals are plural indefinites

Many of Carlson's arguments against analyzing bare plurals as plural indefinites come down to an apparent lack of an existential reading for the bare plural which is available for the indefinite singular in the same context. Examples of Carlson's illustrating this are (90) and (90).

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indefinites, and in a way not different from singular *some* NPs, which differ semantically from singular indefinite NPs.

[26] These and additional counterarguments can be found in many analyses of genericity which have appeared since Carlson (1977).

(90) a. Minnie wishes to talk with a young psychiatrist.

b. Minnie wishes to talk with young psychiatrists.

(90)a has both an opaque and a transparent reading, whereas (90)b seems only to have the opaque reading. That is, (90)b does not have a reading meaning, "there are young psychiatrists with whom Minnie wishes to talk." As Gillon observes, however, this is not strictly true. Compare (90)b to (91).

(91) Minnie wishes to talk with particular/specific/certain young psychiatrists.

(91) has only the reading alleged to be unavailable for (90)b. Furthermore, this is not because (91) is translatable as, "Minnie wishes to talk with young psychiatrists which are particular/specific/certain." That is, the noun phrase in question in (91) has the same domain as that in (90)b; it is just that the predication is restricted to some subset of this domain in (91), whereas it is applicable to every member of this domain in (90)b. The modifiers added in (91) force the bare plural noun phrase to have a specific reading, but otherwise they do not affect its semantics. This specific reading is just the reading Carlson asserts is not available for the bare plural.

Another of Carlson's arguments involves what he calls "differentiated scope". This is illustrated by (92), his (29) and (30).

(92) a. ?A dog was everywhere.

b. Dogs were everywhere.

Carlson claims that the only reading available for (92)a says that a certain dog was in every location, an anomalous situation. He claims that the only reading available for (92)b says that in every location there were some dogs, though it was not the same set in every location. Because the indefinite singular and the bare plural have entirely different readings, Carlson argues, the latter cannot simply be a restricted version of the former

differentiated only by number. I do not feel that this example truly demonstrates Carlson's point, however. Compare (92) to (93).

(93) The noxious gas was everywhere.

(93) is not anomalous, though it is presumably the same stuff, in some sense, which is in every location. Gases, unlike individual dogs, can be in more than one location at once. Similarly, there is a "universal grinder" reading of (92)a which reads that some part of a particular dog could be found in all locations. The natural reading of (92)b can be derived by the same mechanism: the subparts of a plurality are merely subsets of the plurality. Processing a plurality through the universal grinder produces sets of individuals which are subsets of the plurality. The anomalous reading of (92)a is available for (92)b as well. One need only force a specific reading on (92)b via the addition of one of the adjectives of specificity.

The third class of argument Carlson uses to establish that bare plurals are not indefinite plurals concern anaphora. I repeat one of the sets of examples Carlson uses in (94), his (49–52); I have rephrased his (52) to make it parallel to the other examples in the set.

(94) a. Kelly is seeking a unicorn.
b. Kelly is seeking a unicorn, and Millie is seeking it, too.
c. Kelly is seeking a unicorn, and Millie is seeking one, too.
d. Kelly is seeking unicorns, and Millie is seeking them, too.

Carlson's point is that (94)a has two readings, one transparent and one opaque. The sentence may be disambiguated by a following sentence containing anaphora to the ambiguous noun phrase, and the meaning that remains depends on the anaphor chosen. *It* forces the transparent reading, whereas the reading with *one* is necessarily opaque. Assuming *they* patterns like the personal pronoun *it*, and assuming the bare plural can

have no transparent reading, (94)d should be anomalous. It isn't, but it does have only the opaque reading. Carlson argues that this difference in interpretations forced by the anaphors must derive from the antecedent, since it cannot derive from the anaphors: Carlson shows that *it*, too, may accompany an opaque reading. He concludes that bare plurals cannot have the same semantics as indefinite plurals, because they do not produce equivalent interpretations in composition with anaphors.

The flaw in this argument is that there is no plural of *one*. Because of this, Carlson's evidence does not force us to accept his conclusion; this same evidence can be taken to show that the opaque reading of referring expressions is preferred in intensional contexts. The argument goes as follows. Suppose *one* is only compatible with the opaque reading. Empirically this seems to be the case. Because *one* is only compatible with the opaque reading, failure to choose it is evidence that the transparent reading is intended. The same paradigmatic contrast is not available in the plural; there is no plural equivalent of *one* such that one's failure to choose it as an anaphor can be taken as evidence that the transparent reading of the antecedent is intended. If the plural personal pronoun is interpreted as opaque, as it is, this is evidence that the default reading for an indefinite noun phrase in an intensional context is opaque. In other words, there are three correlating phenomena: 1) whether the antecedent is singular or plural, 2) whether or not *one* is available as an anaphor, and 3) whether the personal pronoun is interpreted with opaque or transparent reference. Carlson says there is a causal correlation between the first phenomenon and the third and that the second is spurious. I am suggesting that the causal correlation is between the second and the third and that the first is spurious. Moreover, we have already shown that the transparent reading is also available for the plural, though an adjective of specificity is necessary to force this reading. I will not go into Carlson's other arguments concerning anaphora, since they all depend on the mistaken assumption that there is no specific reading for bare plural noun phrases.

One might argue that the indefinite singular and the bare plural differ in how readily they accept a specific reading. However this may be, it is slim evidence that the bare plural is not to be construed as the plural counterpart of the indefinite singular. Furthermore, the evidence is not so clear that the plural and singular differ greatly in this respect. In almost all the cases cited by Carlson to show that the specific reading is available only for the indefinite singular, the specific reading is dispreferred even for the singular. Consider, for example, (90)a. Though the specific reading is available, it is certainly not the default interpretation of the sentence; (90)a is awkwardly phrased at best if the specific reading is what the speaker intends to communicate. The specific reading is more acceptable if the noun phrase is made more descriptive, if *a young psychiatrist* is replaced by *a young psychiatrist she met yesterday*, say. This device does not work for bare plurals. A second means for ensuring that a singular indefinite has the specific reading is to modify it with an adjective of specificity. This device is available for bare plurals. The indefinite singular and the bare plural certainly don't differ semantically in whether or not they allow a specific reading, and the degree to which they differ pragmatically is not vast.[27]

3.2.4.2 why bare plurals do not refer synecdochically to kinds

The one place where Gillon's counterargument to Carlson's argument is unsatisfactory is in his discussion of the kind-referring uses of the bare plural. Gillon's argument is that this use of bare plurals is not remarkable because all noun phrases have generic uses, and in support of this he cites a number of instances of synecdochical generics similar to those in (95).

[27] Jean-Pierre Koenig has suggested to me that the difference in the acceptability of specific readings for plural indefinites as opposed to singulars might arise from pragmatics and world expectations. For example, it is odd to suggest that there is a specific subset of young psychiatrists that one wants to meet without specifying why this subset is special. Furthermore, as we experience and discuss the world, individuals are likely to be distinguished but not subsets of groups. To specify a distinguished subset one would simply identify it as a different group.

(95) a. Chrysler makes several of the cars rusting in Hank's front yard.

b. Chrysler makes THIS car, but not THAT one. [said with pointing gestures to two cars]

c. Chrysler makes no car that Jerry owns.

Carlson was aware of these generics and rightly set them aside as a distinct phenomenon. The problem with these examples is that they involve a mechanism of kind reference distinct from that illustrated in (89). Synecdochical generics involve a variety of indirect reference akin to that illustrated in (96) and discussed in Nunberg (1995).

(96) The omelet would like a glass of orange juice. [said by a waitress to a cook.]

In (96), there is a sortal mismatch between the subject and the predicate: omelets are not the sorts of things that can have desires, much less desires for beverages. The hearer thus is forced to conclude either that (96) is infelicitous — the speaker has misspoken or holds bizarre beliefs about the world — or that the speaker does not in fact intend to predicate a desire of the omelet, but rather is using the phrase to designate some entity that may have desires. Associated with the omelet is the person who ordered it, and thus assuming that the speaker is rational and has spoken correctly, the hearer may infer that she is referring to this person via the phrase *the omelet*. Similarly, particular cars are not the sorts of things that anyone can have the habit or predisposition to make or not to make. In the absence of adverbial expressions of time, the simple present tense of the verbs in (95) must be either an eye-witness present, a narrative past, a future of appointment, or a "timeless present" indicating a habit or predisposition. For various reasons, the only interpretation compatible with each of the examples in (95) is the predication of a habit or predisposition, but there is a sortal mismatch between this predication and the particular cars which serve as its arguments. The hearer of (95) is forced to conclude that the speaker intends to refer to something else via the particular cars, and associated with every car is the model of that car. (Instances of) models are the sorts of things that one

may habitually make, thus the hearer infers in (95) that the speaker is referring to models of cars, and models are a variety of kind.

This cannot be the explanation of all bare plural generics, however, because not all bare plural generics involve reference to particular instances of a kind. Indeed, a puzzling fact about the bare plural, observed at length in the preceding section, is that it is quite difficult to get specific readings for them without the assistance of adjectives of specificity such as *specific*, *particular*, or *certain*. Compare (97)a and (97)b.

(97) a. Chrysler makes <u>the cars</u> in Joe's driveway.

b. Chrysler makes <u>cars</u> in Joe's driveway.

In both of these examples, some sort of generic reference is involved, but if synecdochical reference were involved in (97)b as Gillon suggests, it should mean that some of the cars in Joe's driveway are of Chrysler makes. Instead, its most natural reading is that Chrysler is in the habit of constructing cars of some model or other right in Joe's driveway, that his driveway is a site of car manufacture. There is a second still more implausible non-synecdochical reading of (97)b: Joe's driveway is the one and only site of manufacture for Chrysler cars. The synecdochical reading is available only with a certain intonation and a little contextual encouragement; this in spite of the fact that the synecdochical generic is the least pragmatically odd — it is the only reading which does not involve Chrysler manufacturing its cars in Joe's driveway. Note also, there is only one generic reading for (97)a or the examples in (95); the bare plural has three. Since the bare plural has more generic interpretations than ordinary kind referring expressions, there must be a separate variety of generic reference which is available with bare plurals but not all other noun phrases. Furthermore, consider (98).

(98) Chrysler makes <u>a car</u> in Joe's driveway.

This seems to have all the generic readings of (97)b, though now the availability of the synecdochical and non-synecdochical generics is reversed. Both readings are awkward, but the synecdochical generic derived from a reference to a specific car is less so. To get the reading which says that Joe's driveway is a site of car manufacture requires much contextual tweaking to be available at all.[28]

These non-synecdochical generic readings are available only to the bare plural and the singular indefinite. This suggests that they are associated with indefiniteness, and the bare plural thus is truly, at least in these cases, an indefinite plural. We already have a mechanism to account for generic reference with the indefinite singular: universal generalization from an arbitrary instance. Universal generalization is equally valid from an arbitrary set of instances, so it would seem that the same mechanism could explain plural generics. There is one respect, however, in which the two varieties of indefinite generics diverge: only indefinite plurals can stand as arguments of predicates of kinds. Consider (99).

(99) a. ?Marconi invented a radio.
b. Marconi invented radios.
c. ?A panda is nearly extinct.
d. Pandas are nearly extinct.

The singular indefinites are acceptable with these predicates only on taxonomic or synecdochical readings: they cannot refer to the kinds radio or panda, but must refer to subkinds of these kinds. The most natural readings of the indefinite plurals, on the other

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[28] Both synecdochical and non-synecdochical generic readings of (98) are indeed possible. Consider (i), an analog to (97).

(i) a. *Chris smokes <u>a cigar</u> in Joe's driveway (and only in Joe's driveway. It's the only suitable place, as far as he is concerned.)
b. Chris smokes <u>a cigar</u> in Joe's driveway (before he can ever get up the courage to knock.)

c. ?Chris smokes a cigar in Joe's driveway. (Garcia Vega, I believe it is.)

Now the most natural reading of the noun phrase is non-specific, (i)a and (i)b.

hand, are not taxonomic or synecdochical: they do not concern pluralities of subkinds of the kinds radio and panda, but the kinds themselves. The rest of my discussion of bare plural generics will be devoted to explaining this difference.

3.2.4.3 bare plurals designate groups, not kinds

The largest part of the explanation for the difference between singular and plural indefinite generics resides, I believe, in the different properties of individuals versus groups. Consider bees, a quintessential example of a communal organism. There are many properties which bees have as a hive which they do not have as individuals. An individual bee does not swarm, build a hive, or hibernate over the winter. Groups may have properties which are not exhibited by their individual members. It is also demonstrably true that kinds have properties which are true of groups of their instantiations but false of any particular instantiation.

(100) a. Medieval man built many beautiful cathedrals.

b. The sheep consumes fifty percent of the net product of photosynthesis in Britain.

c. Homo sapiens has been in Australia since roughly 40,000 B.C.E.

The general explanation for the difference between singular and plural indefinite generics then is this: the properties of kinds are, with perhaps a few exceptions, a subset of the properties of the groups of their instantiations. Bare plurals may refer to an arbitrary group of instantiations of a kind. One may infer by universal generalization that the bare plural has all the properties one may predicate of any group of instantiations of the kind. A generic bare plural thus has all the properties of the kind. One may use a generic bare plural to refer indirectly to the kind itself, therefore; and bare plurals may refer to the kind argument of a predicate of kinds. Singular indefinites, on the other hand, do not allow universal generalizations to all properties which may be true of groups of instantiations of a kind — a singular arbitrary individual can exhibit no property which

no particular singular individual exhibits; therefore singular indefinites do not allow universal generalizations to all properties of kinds; therefore they cannot stand as the kind argument of predicates of kinds. The upshot of this argument is that neither singular nor plural indefinites refer directly to kinds, but plural indefinites allow a variety of indirect reference to kinds.

The positive evidence I have found for this hypothesis is not strong. Nevertheless, the evidence I have found does support it. One might expect evidence of two sorts: cases in which bare plurals may be used to assert the universal possession of a certain property by a group when a definite generic is not felicitous, because it is not a property of the kind; and cases in which a kind possesses a property not exhibited by any subset of its instantiations, where the definite generic is felicitous but not the bare plural. (101) provides evidence of the first sort.

(101) a. A milk bottle is difficult to recycle.

b. Milk bottles are difficult to recycle.

c. ?The milk bottle is difficult to recycle.

Milk bottles would seem to be a well-established kind, and they might be difficult to recycle, but it appears that difficulty in recycling is not a property of the kind milk bottle. Evidence of the second sort is provided by examples (99)b and (99)d.

(99) b. Marconi invented radios.

d. Pandas are nearly extinct.

I presented these as though they were unimpeachable English sentences, but (99)b and (99)d are not equally acceptable. All native speakers of English that I have surveyed agree that (99)b is odd or infelicitous to some degree relative to (99)d. Some have had minor qualms about (99)d as well, but in all cases (99)b has been found more infelicitous. Only kinds can be invented or can become extinct. These predicates describe properties

of kinds that arguably cannot be properties of any subset of the instantiations of the kind. If bare plurals refer to groups of ordinary individuals, not kinds, we should expect (99)b and (99)d to be infelicitous.

As Jean-Pierre Koenig has pointed out to me, (99)b is fine if the predicate is stressed.

(102) Marconi INVENTED radios.

I believe the explanation for the acceptability of bare plurals as the arguments of predicates of kinds and for the difference between *invent* and *be extinct* lies in this observation: the kind argument of *invent* is the object and that of *be extinct* is the subject. Subjects tend to be continuing topics of discourse far more than objects (DuBois 1987). Another indicator of topichood is stress. Though *radios* is the object in (102), the stress pattern indicates that it is a continuing topic of discourse. The generalization which unifies the acceptability judgments over (99) and (102) is that indefinite plurals may be taken to refer to kinds if the kind they refer to is a continuing topic of discourse. (103) and (104) are more data supporting this hypothesis.

(103) a. Have you ever thought about radios much? Marconi invented them, you know.

b. ?Have you ever thought much about inventors? I know you like Marconi. He invented radios.

(104) a. I despise irresponsible importers. Their shenanigans have made {the American elm/?American elms} all but extinct.

b. I love American elms, but the shenanigans of irresponsible importers have made them all but extinct.

Here is a speculative explanation of this pattern. Indirect reference is less acceptable than direct reference for introducing an entity to discourse: at the beginning of discourse, when there is little context to support inferences and thus reference is less

likely to succeed in general, direct reference will be most strongly preferred. To use a form of indirect reference suggests that the supporting context already exists and there is little risk of reference failure. Hence the association between generic bare plurals, which refer only indirectly to kinds, and continuing topics of discourse.

This explanation provides support for the rational implicature analysis of generic bare plurals. If generic plurals refer to kinds only indirectly, contra Carlson (1977a), one should expect the pattern of acceptability shown in (99) and (102).

The rational implicature analysis accounts for the primary data, the similarity of bare plurals to generic indefinites and their acceptability as kind arguments for predicates of kinds, and it accounts as well for the subtle variation in acceptability between (99) and (102).

3.2.5 aphoristic generics and typicality noun phrases

Two classes of non-referential (in)definite noun phrases remain to be discussed; these are what I have called aphoristic generics and typicality noun phrases. These noun phrases differ from the other noun phrases I have discussed both formally and in their usage. Aphoristic generics are illustrated in (105); typicality noun phrases, in (106).

(105) a. <u>The virtuous man</u> does not question the virtue of others.

b. <u>The man who gives his paycheck to his wife</u> is happier than <u>the man who gives it to his mistress</u>.

c. <u>He who lives in a glass house</u> should not throw stones.

d. <u>Someone who lives in a glass house</u> should not throw stones.

e. <u>A person who lives in a glass house</u> should not throw stones.

f. <u>Anyone who lives in a glass house</u> should not throw stones.

g. <u>One who lives in a glass house</u> should not throw stones.

(106) a. The average American watches 14 hours of commercial television a day.

b. An ordinary housecat suffering from feline leukemia sleeps 14 hours a day.

c. Your typical Kent mango weighs about a pound.

I have named the aphoristic generics after their use in aphoristic assertions, short sayings asserting a general truth. I have named the typicality noun phrases after the modifiers indicating typicality or normality which they must contain. I will describe the two in the same section because aside from some differences in the determiners they may contain and some differences pertaining to genericness, they pattern identically. I shall discuss why the two should pattern alike in § 3.2.5.2 below.

The first thing to note about the aphoristic generics and typicality noun phrases is the heterogeneity of the determiners they may take. This suggests that their generic or generalizing sense is not itself derived from the conventional meaning of their determiners. Aphoristic generics require a modifier, and restrictive relative clauses work better than adjectives. The definite NPs in (107), unlike the indefinite NPs, only have a generic sense when they take this aphoristic form.

(107) a. {The/a} person who eats cheese cannot be allergic to dairy products.

b. {*The/a} cheese-eating person cannot be allergic to dairy products.

Pronouns can only be modified by relative clauses. The other noun phrases are more acceptable as aphoristic generics if they have a restrictive relative clause than if they have only adjectival modification. It has been said, for example, that *any* noun phrases modified by a restrictive relative clause are virtually unlimited in their distribution (Carlson, 1981). This is because *any* noun phrases are interpreted as aphoristic generics only when they are modified by restrictive relative clauses, and aphoristic generics have much wider distribution than other sorts of *any* noun phrases.

The second notable generalization across aphoristic generics and typicality noun phrases is that they do not refer to kinds. One may deduce this from the fact that they

differ from ordinary definite generics, which do refer to kinds, in at least seven respects: 1) they correspond to ad hoc kinds; 2) they fail the kind term test; 3) they prefer different predicates; 4) they eschew the progressive aspect and adverbs indicating a specific time; 5) they are interchangeable with indefinite generics; 6) they cannot serve as the kind argument of a predicate of kinds; and 7) they pass the "typicality test".

In the following sections I shall explore each of these differences in turn and then, in § 3.2.5.2, I shall give an account of these constructions. I shall argue that aphoristic generics are just another instance of universal generalization, though in this case the generalization is over arbitrary situations. I shall argue that typicality noun phrases denote an abstract individual whose properties are just those common to the actual instances the individual is an abstraction from.

3.2.5.1 aphoristic and typicality generics do not refer to kinds

(105)b–g and (106)b suggest that aphoristic generics and typicality noun phrases may correspond to ad hoc kinds. Though people who live in glass houses, men who give their paychecks to their wives, men who give their paychecks to their mistresses, and ordinary housecats suffering from feline leukemia might be conventional kinds, this seems unlikely. These kinds are unfamiliar as cultural types; and moreover, such familiar classes of individual as impatient drivers and heartless bankers do not constitute conventional kinds — the latter do not pass the kind term test and cannot serve as the arguments of predicates of kinds, for instance. Furthermore, aphoristic generics and typicality noun phrases can certainly be created ad hoc. Consider (108).

(108) a. The man who shops at Lenehan's shops for style.

b. The typical Ferrari owner doesn't wear socks with sandals.

Further evidence that aphoristic generics and typicality noun phrases are distinct from generic definites lies in their failure to pass the kind term test. An aphoristic or

typicality NP of the form DET N' cannot be replaced by an NP of the form DET *kind* N' or DET N' *as a kind*, where the word *kind* may be replaced by equivalent words, such as *type, species, element*, etc. Keep in mind that the construction *the kind of* N' is not an acceptable frame for the kind term test, as it is a general purpose hedge. (109) represents the application of the kind term test to some of the sentences in (105) and (106).

(109) a.*<u>He who lives in a glass house as a kind</u> should not throw stones.

b.*<u>The kind man who gives his paycheck to his wife</u> is happier than the man who gives it to his mistress.

b'.*<u>The man who gives his paycheck to his wife as a kind</u> is happier than the man who gives it to his mistress.

c.*<u>The kind virtuous man</u> does not question the virtue of others.

c'.*<u>The virtuous man as a kind</u> does not question the virtue of others.

d.*<u>The kind average American</u> watches 14 hours of commercial television a day.

d'.*<u>The average American as a kind</u> watches 14 hours of commercial television a day.

Compare this to a generic definite.

(110) <u>The species *Homo sapiens*</u> arrived in Australia around 40,000 B.C.E.

This is strong evidence that generic definites involve reference to kinds and aphoristic generics and typicality noun phrases do not.

Different properties can be predicated of definite generics than can be predicated of either aphoristic generics or typicality noun phrases.

(111) a. *Homo sapiens* is a placental mammal.

b.?He who lives in a glass house is a placental mammal.

c.?The virtuous man is a placental mammal.

(112) a.**Homo sapiens* does not care for games of chance.

b. He who lives in a glass house does not care for games of chance.

c. The virtuous man does not care for games of chance.

(113) a.**Homo sapiens* covers its mouth when it sneezes.

b. He who lives in a glass house covers his mouth when he sneezes.

c. The virtuous man covers his mouth when he sneezes.

I take this as evidence that definite generics and aphoristic and typicality noun phrases refer to individuals of different types; specifically, definite generics refer to kinds and aphoristic and typicality generics refer to ordinary individuals. It may be that some kinds have essentially the same sorts of properties as ordinary individuals, but there are kinds which have distinct properties from those of the ordinary individuals which instantiate them, and aphoristic generics and typicality noun phrases can never denote something having the properties of these kinds.

Aphoristic generics and typicality noun phrases have a disinclination to occur with the progressive aspect or adverbial expressions indicating the specific time of occurrence of an event.

(114) a.?The man who is giving his paycheck to his wife is happier than the man who is giving it to his mistress.

b.?<u>The typical Ferrari owner</u> isn't wearing socks with sandals.

c.?<u>The average American</u> is watching the *Honeymooners* as we speak.

These examples are not wholly bad, but in the acceptable readings the noun phrases still do not correspond to specific situations. For example, (114)a is acceptable on the reading equivalent to *The man who is in the habit of giving his paycheck to his* wife… This disinclination to occur with forms suggesting a specific time of occurrence for an event

indicates that aphoristic generics and typicality noun phrases do not describe individuals in specific situations. Compare this to the definite generics in (115).

(115) a. The incandescent lightbulb was invented by Thomas Alva Edison at 6:00 p.m. 1895 in his laboratory in Menlo Park, California.

b. The wolf is being reintroduced to the region surrounding Yellowstone National Park.

Another respect in which aphoristic generics and typicality noun phrases differ from definite generics is that the former may be replaced by indefinite generics; whereas the definite generic often cannot be so replaced.

(116) a. A man should not throw stones. (cf. *He who lives in a glass house*…)

b. A Klingon does not question the virtue of others. (cf. *The virtuous man*…)

c. An American watches 14 hours of commercial television a day. (cf. *The average American*…)

Compare these to (117), the analog of (115).

(117) *An incandescent lightbulb was invented by Thomas Alva Edison at 6:00 p.m. 1895 in his laboratory in Menlo Park, California.

Just as indefinite generics cannot occur as the kind argument of predicates of kinds, aphoristic generics and typicality noun phrases cannot; and in this, too, they differ from definite generics.

(118) a.*The reptile which can fly is extinct.

b.*Thomas Alva Edison invented the typical incandescent lightbulb.

Again, this shows that aphoristic generics and typicality noun phrases do not refer to kinds.

Finally, just as definite generics pass the kind term test and aphoristic generics and typicality noun phrases do not, aphoristic generics — and, trivially, typicality noun phrases — pass what we may term the typicality test and definite generics do not. The NP DET N' passes this test if it may be replaced in context by an NP of the form DET *typical* N' or the adverb *typically* may be inserted into this context, where *typical* may be replaced by equivalent expressions such as *average*, *prototypical*, *stereotypical*, etc. Consider,

(119) a. He who lives in a glass house typically should not throw stones.

b. The man who gives his paycheck to his wife is typically happier than the man who gives it to his mistress.

c. The typical virtuous man does not question the virtue of others.

d. The typical man who shops at Lenehan's shops for style.

Compare these to (118)b. The reason for this difference between the two generics is quite obvious, assuming definite generics refer to kinds and aphoristic generics refer to ordinary individuals. Kinds, being unique, cannot be called typical, average, or ordinary; this implies a comparison among instances of a common type. Consider (120).

(120) a.*The typical Henry helps bring in the groceries.

b.*The typical Big Bang occurred some 10–14 billion years ago.

There is only one Henry at issue in (120)a, so it makes no sense to call him typical. Likewise for the Big Bang.

3.2.5.2 explanation of aphoristic and typicality generics

All of the evidence I have adduced suggests two hypotheses: aphoristic generics refer to ordinary individuals in non-specific situations; typicality noun phrases refer to non-ostensible individuals which have the properties typical to the set of ostensible

individuals generalized over. The first hypothesis suggests the mechanism by which aphoristic expressions achieve generic reference: they refer to an individual in an arbitrary situation. Because this situation is arbitrary, one may apply universal generalization. All individuals fitting the description in a situation of the appropriate type, excluding those exceptions licensed by the game of reference, must have the property predicated. Aphoristic definites correspond to ad hoc kinds because they do not involve reference to conventional kinds. They fail the kind term test because they denote ordinary individuals. They prefer certain predicates over others because only certain predicates describe ordinary individuals in arbitrary situations. They eschew progressive aspect and adverbs indicating a specific time because these are incompatible with an arbitrary situation. They are interchangeable with indefinite generics because they operate by the same mechanism. Generic indefinites involve reference to an arbitrary individual. Aphoristic generics involve reference to an ordinary individual of a certain type in an arbitrary situation. Because the situation is arbitrary, however, the individual, too, is arbitrary. Aphoristic definites cannot serve as the kind argument of predicates of kinds, again because they do not refer to kinds. And for the same reason, they do pass the typicality test. I will not elaborate on any of these arguments because in doing so I would only repeat my arguments from my discussion of indefinite generics and characterizing sentences in the earlier sections of this chapter.

The explanation of typicality noun phrases is trivial: whatever they might denote, their denotatum has all and only those properties which are normal, average, or typical to the ordinary, ostensible individuals in some set. Typicality noun phrases correspond to ad hoc kinds because normality, averageness, or typicality can be defined over any set of individuals of a common type. They fail the kind term test because a typical individual is something different from a kind: kinds have properties common to the collection of their instances, for example; typical individuals do not. For the same reason, typicality noun phrases prefer certain predicates over others. They eschew progressive aspect and

adverbs indicating a specific time because a set of individuals of a certain type in general does not exist only at a certain time. They are interchangeable with indefinite generics because indefinite generics, too, involve generalizing over a set of individuals of a common type. Typicality noun phrases cannot serve as the kind argument of predicates of kinds, again because they do not refer to kinds. Why typicality noun phrases pass the typicality test requires no explanation.

Just what does a typicality noun phrase denote, though? It appears that definite and indefinite typicality noun phrases differ in their denotation. One cannot point to *the* average American, but one may be *an* average American. Further, one may predicate properties of definite typicality noun phrases which are possessed by no ostensible individual of the type in question.

(121) a. The average American family has 2.7 children.

b. The stereotypical Hun was seven feet tall, ate raw flesh, and was in league with the devil.

This is not true of indefinite typicality noun phrases.

(122) a.?An average American family has 2.7 children.

b.?A stereotypical Hun was seven feet tall, ate raw flesh, and was in league with the devil.

I suggest that definite typicality noun phrases refer to non-ostensible individuals similar to kinds; indefinite typicality noun phrases, to an indeterminate ostensible individual which possesses the properties of the denotatum of the definite typicality noun phrase to the extent that this is possible. In the interest of space, I will leave this issue without further examination. All that requires note is that any denotatum which has as its properties only those properties which are average, normal, or typical in the set of entities in question will behave as typicality noun phrases empirically behave.

Aphoristic generics are so similar to typicality noun phrases because they both involve abstraction over a set of individuals. Only the aphoristic noun phrases are generic, however, because only they are normative and admit exceptions.

(123) a. ?He who lives in a glass house should have his blood pressure checked regularly.

b. He who lives by the sword shall die by the sword.

Typicality noun phrases, on the other hand, are not normative.

(124) The typical lion has tartar on its molars.

Typicality noun phrases admit exceptions inasmuch as averaging over a group irons out variation. Typicality noun phrases do not admit exceptions in the same way that generics do, however.

(125) a. An emperor penguin lays a single egg.

b. The bird whose nest is smaller than its bottom lays a single egg.

c.*A typical emperor penguin lays a single egg.

(An aphoristic generic sentence more closely parallel to (125)a cannot be constructed, for want of an appropriate restrictive relative clause.)

In every respect, aphoristic generics behave as one would expect noun phrases to behave that refer to individuals in arbitrary situations. In every respect, typicality noun phrases behave as one would expect noun phrases to behave that refer to individuals with typical properties. The possibility of referring to such individuals is inherent in the semantic theory we have already employed to account for predicate nominals and definite generics. The rational implicature account of (in)definiteness gives us an explanation for these noun phrases “for free”. That it does so argues further for its explanation of predicate nominals as well.

3.3 CONCLUSION

In this and the previous chapter I have demonstrated that one may give a unified choice functional rational implicature treatment of both referential and non-referential (in)definite noun phrases. The rational implicature account of (in)definiteness is that markers of definiteness indicate that the speaker would be satisfied with a choice function over the extension of the nominal determined by the preferences of the hearer; markers of indefiniteness indicate that she would not be satisfied. The absence of any marker indicates, as one would expect, that the speaker does not believe any communicative function would be served by indicating her satisfaction with such a choice function. One may also phrase the rational implicature account fairly accurately in terms of the game of reference: the speaker does or does not believe the hearer has a winning strategy in the game of reference played over the extension of the nominal. These two accounts only diverge in certain marginal cases. The difficulty in extending the rational implicature account to non-referential noun phrases is that these seemingly do not have an extension which provides the relevant choices. I have addressed this criticism by arguing that certain novel varieties of individuals should be included in the possible extensions of noun phrases, namely, roles, typical individuals, kinds, and arbitrary individuals. The first provides a referent for predicate nominals, the second, for typicality noun phrases, the third, for definite generics, the fourth, for indefinite and aphoristic generics.

In providing a rational implicature account of generics I have had to account for four properties of the interpretation of these noun phrases: their restriction to well-established kinds, their admittance of exceptions, their normative character, and their refusal of extensional discourse restrictions. The first applies only to definite generics, and I have argued that it follows from the nature of definiteness: a referent is definite if it is mutually identifiable, which in the case of kinds entails that they be well-established. The admittance of exceptions follows from the same cause for both definite and

indefinite generics: in the game of reference, tacit exceptions are admitted so long as these are mutually inferable. I have suggested that what is mutually inferable is just what ordinarily occurs in the situation containing the individual being characterized. I showed that the remaining two properties of generics, their normative character and their eschewal of extensional discourse restrictions, are linked. I argued that in the case of definite generics, both follow from the intensional nature of kinds. I argued that in the case of indefinite generics, implicit contextual restrictions are pragmatically ruled out as this would make an assertion containing these noun phrases too weak. Without implicit contextual restrictions, indefinite generics must be normative.

Finally, I have sought to show that aphoristic generics are identical in the mechanism of operation to indefinite generics. Indefinite generics involve universal generation from arbitrary individuals. Aphoristic generics involve universal generalization from arbitrary situations. Typicality noun phrases, which in most respects appear quite similar to aphoristic generics, involve reference either to arbitrary ostensible individuals which are typical, or non-ostensible typical individuals that embody all that the ostensible individuals in a set of situations of a common type have in common.

The chief advantage of the rational implicature analysis of these phenomena, after the completeness of its coverage, is its parsimony. To account for predicate nominals we need only postulate roles, something already suggested by other scholars for other purposes. To account for definite generics we need only postulate kinds, something required in any case to account for the non-descriptional nature of kind reference. To account for indefinite and aphoristic generics we need only postulate reference to indeterminates, again something which is independently required. To account for typicality noun phrases we need only postulate typical individuals, something which is empirically necessary in any case. In effect, the rational implicature account of referential (in)definites gives us an account of non-referential (in)definites for free.

One issue which has come up repeatedly in the discussion of non-referential (in)definites has been specificity. Among other things, there has been a debate as to whether bare plurals are indeed indefinite, because they seem to lack the specific reading available to singular indefinite noun phrases. I argued that the specific reading was indeed available for the bare plural, and demonstrated that one can force such a reading with adjectives of specificity. In the next two chapters, I shall present a rational implicature account of specificity. I shall study the strictly non-specific determiner *any* and the strictly specific adjective of specificity cum determiner, *certain*. In extending the rational implicature account to these expressions I shall speak not of the speaker's satisfaction with someone else's preferences, but her satisfaction with her own.

Chapter 4: specificity

The (in)definite determiners are so inextricable in their semantics that it would be difficult to study one without giving some account of the other. Not so the (non)specific determiners. *Certain* is seldom studied at all in its own right, so one must devote considerable time simply to establishing its use. Even then its relation to the non-specific determiner *any* is seldom recognized; it is still by no means a settled issue that *any* is a single determiner with a single, flexible meaning. Even if both determiners were recognized and their use understood, they might not be recognized as a pair, since the notion of (non)specificity itself is considerably less studied than (in)definiteness. For these reasons, I will devote a separate chapter to each of the (non)specific determiners; and before I do this, I will devote a brief chapter to studying (non)specificity itself. I do not mean in this chapter to decide what people should use the term (non)specific to refer to. But to reveal the semantic notions that underlie the use of *certain* and *any*, it will be useful to have a better understanding of what (non)specificity might be.

I will begin this examination of (non)specificity by presenting the scopal account. This account is standard, in a sense to be clarified below. I intend my discussion of this account to be the vehicle through which the empirical properties of (non)specificity will be revealed. I will present the scopal analysis of specificity, four criticisms of it, and a sketch of a solution to these criticisms. The first two criticisms, which recur in various forms in the literature, concern the number of interpretations the scopal analysis makes available: there may be more interpretations of an ambiguously (non)specific indefinite noun phrase than there are scopes for an existential quantifier interpreting the indefinite determiner; and there may be fewer. The third criticism concerns a certain attempt to address the paucity of scopal analyses: a scoping paradox arises if we introduce new

covert epistemic predicates to produce the required number of interpretations.[1] The fourth criticism is that the scopal analysis of (non)specificity is non-perspicuous; it obscures the fact that the central feature of a specific noun phrase is that someone has a particular element of the extension of the common noun in mind. All of these criticisms can be met if we adopt a notation which indicates specificity not with scope, but via reference to the individuals able to identify the referent in question.

4.1 NATURE OF SPECIFICITY

It is said that sentences such as (1) are ambiguous (q.v. Geach, 1962).

(1) Sally thinks Mark would like to meet a golfer.

One interpretation is that Sally thinks Mark would like to meet someone, anyone, fitting the description "golfer". Another interpretation is that Sally has a particular person in mind who happens to be a golfer. Still other interpretations can be teased out of this sentence. They will be discussed below. Note first of all that the first two are truth-conditionally distinct interpretations. Imagine that Alexandra is a golfer, the only golfer that Sally knows and holds any opinion about, she holds no opinion about golfers generally, and furthermore, she does not even know that Alexandra is a golfer. In this case, the second interpretation, the specific one, could be true, but the non-specific one would have to be false: for Sally to believe that Mark would like to meet anyone fitting the description "golfer" would be for her to hold an opinion about golfers generally, something which *ex hypothesi* she does not do. Contrarily, imagine that Sally comes from a land where there is no golf. She reads a book describing golf and its affiliated customs, and she comes to believe that golfers are the sort of people that Mark would like to meet.

[1] The first three criticisms as I list them here are really categories of criticisms. The arguments categorized under these three headings and analogous arguments are also elaborated in Saarinen (1981) and Kuroda (1982).

In this case, since she knows no golfers, the specific interpretation of (1) would be false but the non-specific interpretation, true. One may also find scenarios under which both interpretations are false or both are true. The specific and non-specific interpretations of (1) are truth-conditionally independent and the difference between them is semantic, not, or not solely, pragmatic.

In order to understand the (non)specific ambiguity it may be useful to compare it to Donnellan's attributive/referential ambiguity in definite descriptions (Donnellan, 1966). Both involve an ambiguity in the intended denotation of a potentially referential noun phrase. Donnellan points out that one may use a definite description to refer and make a true assertion of a referent even when the descriptive content of the noun phrase does not hold of the intended referent. He asks one to imagine a scenario in which the speaker is at a party and sees James Bond holding a martini glass full of a clear fluid suspended in which is an olive, say, or a cocktail onion — this is not a precise paraphrase of Donnellan, but any difference is immaterial. Mr. Bond is speaking to a man holding a champagne flute. Mr. Bond's interlocutor is, let us say, an ordinary shoe salesman. The speaker nudges his companion and says,

(2) The man drinking the martini is a spy.

Under these circumstances, the hearer will naturally understand the speaker to be referring to James Bond, not the shoe salesman; and given that Mr. Bond is a spy, the proposition the speaker will be understood to have uttered is true. Furthermore, Donnellan argues that the speaker's assertion is true so long as Mr. Bond is both a spy and the intended referent of *the man drinking the martini*, even if the clear fluid in Mr. Bond's glass is water and the champagne flute contains a martini. It remains controversial just what the truth conditions of this sentence are. (Note that the game-theoretical account does not make a truth conditional claim per se — it concerns reference, not truth —, but it might be taken as agreeing with Donnellan. If reference is determined in a game of

pure coordination, the referent of the noun phrase is the entity the speaker intends to refer to, not the entity the descriptive content of her expression applies to, and if truth is determined relative to this referent, then her statement is true.)

In discussing (2) I have described the so-called referential use of a definite description. Imagine a scenario in which the speaker is a counter-espionage agent speaking to an underling. The underling will have to observe the spies at a cocktail party later in the day. The speaker is therefore telling the hearer which individuals to keep an eye on. She knows that James Bond always drinks martinis at cocktail parties, and she knows that no one else at this particular party can stand the drink. She can reasonably infer, therefore, that the underling may recognize James Bond by his beverage. In this case, she is using the definite description attributively: she means it to be true of whatever entity fits its descriptive content. If the party turns out to be as described in the first scenario, with Mr. Bond drinking olive-flavored water and the shoe salesman, a martini, all agree that (2) is false.

The attributive/referential ambiguity is comparable to the (non)specificity ambiguity because what is at issue in both cases is the intended referent of a particular noun phrase. If it is referential or specific, the noun phrase refers to a particular entity which, so long as the relevant cognizer is not mistaken, just happens to be describable by the intension of the noun phrase. If it is attributive or non-specific, the noun phrase refers, if it has any referent at all, only to the entity or entities picked out by its intension. Referentiality is a term which has been applied to definite noun phrases, specificity, to indefinite ones, but they are so similar that some have suggested they are the same notion and that (non)specificity is just attributiveness/referentiality in indefinite noun phrases (Partee, 1972; Fodor & Sag, 1982). Whether or not this is the case, one may at least begin to understand the former notion by viewing it as the indefinite analog of the latter.

4.2 THE SCOPAL ANALYSIS OF SPECIFICITY AND ITS FAULTS

One means of capturing the various interpretations underlying (non)specific ambiguity is through variation in the scoping of an existential quantifier. This approach is frequently argued against (Saarinen, 1981; Hellan, 1981; Fodor & Sag, 1982;[2] *inter alia*). It is more seldom argued for (Fodor, 1970). Nonetheless, I will present it and arguments against it in order better to reveal the nature of (non)specificity. Below I present the scopal analyses of (1) with a natural language paraphrase of each logical formula.

(1) a. (s think)[(m like)[($\exists x$: golfer)(m meet x)]]

It may or may not be the case that there exists a golfer.

Sally doesn't necessarily believe in the existence of *any* golfer.

Mark doesn't necessarily believe in the existence of *any* golfer.

- Rather, she thinks that he thinks, should a golfer exist, he would like to meet him/her.

b. (s think)[($\exists x$: golfer)(m like)[(m meet x)]]

It may or may not be the case that there exists a golfer.

Mark doesn't necessarily believe in the existence of *any* golfer.

Sally doesn't necessarily believe Mark believes in the existence of any particular *golfer*.

- But, Sally does believe in the existence of *some* golfer.
- She *believes* that Mark believes this particular *individual* exists.

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[2] Fodor & Sag (1982) actually accept the scopal analysis of the term specificity, but they argue that examples such as (1) are better analyzed in terms of referentiality à la Donnellan. Since what is at issue is the phenomena categorized by the term specificity rather than the term itself, I regard Fodor & Sag (1982) to be contrary to the scopal analysis.

- And moreover, she thinks he has a desire concerning this particular individual: he would like to meet him/her.

c. (∃*x*: golfer)(*s* think)[(*m* like)[(*m* meet *x*)]]

Neither Sally nor Mark necessarily believes in the existence of *any* golfer qua golfer.

- But there does exist some golfer or other.
- Sally believes in the existence of this particular *individual*.
- And Sally *thinks* that Mark believes the same individual to exist that *she* believes exists.
- Moreover, she thinks that he would like to meet this individual.

One should note certain correspondences between elements of the formulas and elements of their paraphrases. Namely, if an epistemic operator has within its scope a variable unbound in that scope — (believe)[…*x*…] —, the belief is taken to concern the value of the variable; it is a *de re* belief. If an epistemic operator has within its scope an operator binding a variable — (believe)[…(*Ox*: *P*)(…*x*…)…] —, the belief is taken to concern the operator, not the variable; it is a *de dicto* belief. The formula (*i* believe)[…*x*…] indicates that I have some belief regarding whatever individual is the value of *x*, however this individual might be characterized. The formula (*i* believe)[…(∃*x*)(…*x*…)…] indicates that I believe in the existence of some *x*, not that I have any belief regarding whatever individual might be the value of *x*. These paraphrases correspond to how such logical formulas are conventionally interpreted.

Though the formulas (1)a–c exhaust all the possible scopes for the existential quantifier, it does not exhaust all the possible interpretations for (1), as various people have pointed out. Namely, there is the interpretation wherein the speaker of (1), not Sally or Mark, is asserting of some particular golfer that Mark believes he/she exists and so

forth. That is, (1) might be understood specifically/referentially or non-specifically/attributively. The specific/referential reading would be captured by,

(1) d. $(\exists x\text{: golfer})(i \text{ assert})[(s \text{ think})[(m \text{ like})[(m \text{ meet } x)]]]$

This analysis is still not adequate to capture the truth conditions of (1), however. Consider (3) under the last mentioned interpretation (see also Ioup, 1977).

(3) Sally thinks Mark would like to meet a unicorn.

We are considering the interpretation under which the speaker asserts of some particular unicorn that Sally believes it exists and so forth. The speaker does not believe that this unicorn exists — her assertion could not be falsified by the non-existence of this unicorn —, but she has knowledge of the identity of the unicorn. In order to capture this nuance, we need an analysis such as,

(3)' $(i \text{ posit})[(\exists x\text{: unicorn})(i \text{ assert})[(s \text{ think})[(m \text{ like})[(m \text{ meet } x)]]]]$

Even this formula is not adequate to capture the intended interpretation of (3), however. It is necessary to hedge the existence of the unicorn in some way, but one does not wish thereby to hedge *assert* and everything in its scope (one could make a similar argument regarding *assert*). Something like (3)" might be adequate to the task,

(3)" $[(i \text{ posit})(\exists x\text{: unicorn})] \wedge (i \text{ assert})[(s \text{ think})[(m \text{ like})[(m \text{ meet } x]]]$

But now we have an unbound variable in the second conjunct. This might be dealt with by introducing some version of discourse representation theory (Lewis, 1979; Kamp, 1981; Heim, 1983), dynamic predicate logic (Groenendijk & Stokhof, 1991; Chierchia,

1995), or an E-type situation theoretic calculus (Heim, 1990), but only at the expense of introducing a variety of dynamic double performative hypothesis[3].[4]

There is another problem with the scopal theory of (non)specificity which has more to do with perspicuity and explanatory adequacy than descriptive adequacy. Consider (4).

(4) Mark knows there is a golfer.

a. (*m* know)[(∃*x*: golfer)]

b. (∃*x*)(*m* know)[(*x* golfer)]

(4)a says that Mark knows that something, which we dub *x*, exists and that it is a golfer. Mark does not necessarily know of *x* in particular that *x* is a golfer, but only that among the existing things there is a golfer. (4)b, on the other hand, says that something exists, which we dub *x*, and that Mark knows of *x* that *x* is a golfer. It is in the nature of knowing *of* something that this sort of knowing presupposes a means of identifying that thing. All other considerations aside, (4)b differs from (4)a at least in that the golfer must be some specific individual known to Mark: if (4)b is true then Mark must have some means of individuating the golfer in question in his own knowledge. This is not what (4)b states directly, however. A more explicit means of stating specific knowledge would be something like (4)c.

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[3] The performative hypothesis, proposed in the days of generative semantics, said that every speech act was covertly an assertion whose unexpressed matrix verb was a performative. By this hypothesis, *Pass me the salt* would have the deep structure [I ask you to [pass me the salt]]. This hypothesis has since been abandoned.

[4] If this is not bad enough, note that the standardly available means of eluding scoping paradoxes such as one finds in (3)", the means just mentioned, in fact will not help us out here. The performative verb which has scope over the existential quantifier should prevent it from extending its scope except within the scope of the performative. Consider (i).

(i) *I say that every$_i$ chicken has two legs, and I posit that it$_i$ likes to eat worms.

I will not examine this problem in greater detail. Among other reasons, I do not wish to examine accounts of donkey anaphora.

(4) c. $(\exists p, x)((x\ p) \wedge (\forall y{:}\ p)(y = x) \wedge (m \text{ know})[(x\ p) \wedge (x \text{ golfer})])$

p in this case is some means of individuating entities, represented as an open proposition. What the formula states is that there is a means of individuating entities such that the only entity it picks out is *x*, Mark knows this means, that it is true of *x*, and that *x* is a golfer. Because of the nature of knowing, (4)b presupposes what is novel in (4)c — Mark's knowledge of some property which individuates *x* —, and this being so, one would hardly want to replace the former with the latter. Nevertheless, it is only (4)c which reveals the intuition behind most work on specificity: the speaker (or cognizer) has some individual *in mind* in making the assertion. I find it somewhat regrettable that in the scopal analysis this fundamental intuition, which derives to a large extent from the lexical semantics of epistemic predicates, is passed off as purely a matter of quantifier syntax.

Let us recapitulate the interpretations of (1) in terms of who knows the hypothetical golfer. In the formulas below, I have included the two additional performative predicates.

(1) Sally thinks Mark would like to meet a golfer.

a'. $(i \text{ posit})[(i \text{ assert})[(s \text{ think})[(m \text{ like})[(\exists x{:}\ \text{golfer})(m \text{ meet } x)]]]]$

b'. $(i \text{ posit})[(i \text{ assert})[(s \text{ think})[(\exists x{:}\ \text{golfer})(m \text{ like})[(m \text{ meet } x)]]]]$

c'. $(i \text{ posit})[(i \text{ assert})[(\exists x{:}\ \text{golfer})(s \text{ think})[(m \text{ like})[(m \text{ meet } x)]]]]$

d'. $(i \text{ posit})[(\exists x{:}\ \text{golfer})(i \text{ assert})[(s \text{ think})[(m \text{ like})[(m \text{ meet } x)]]]]$

e. $(\exists x{:}\ \text{golfer})(i \text{ posit})[(i \text{ assert})[(s \text{ think})[(m \text{ like})[(m \text{ meet } x)]]]]$

These interpretations correspond to different communicative intentions on the part of the speaker in uttering (1) and they differ in the contexts in which they are true. Though this array of interpretations is undesirably replete with covert performatives, as I have argued,

it still does not capture all the interpretations of (1) accurately. In particular, it forces a dependency between beliefs in the existence and identity of the referent of *a golfer* and other predicates of propositional attitude in the sentence: if we have only a single epistemic predicate we are unable to represent the state of affairs where I can identify *x* without believing that *x* exists. We have covered this distinction for the speaker — this was the motive for introducing the two performatives —, but Sally or Mark, too, could have a belief regarding the identity of the golfer without believing in her existence. The scopal representation of (non)specificity undergenerates semantic interpretations.

The opposite criticism has also been leveled at the scopal theory of (non)specificity: it overgenerates interpretations. This problem arises most palpably in sentences containing indefinites within extraction islands[5] in the scope of operators such as universal quantifiers or negation. (5) illustrates an extraction island, the complex NP *the rumor that…* (5)' illustrates the scoping possible for a universal and an indefinite noun phrase within this island.

(5) a. John overheard the rumor that every student of mine cheated.

b. John overheard the rumor that a student of mine cheated.

(5)' a.*($\forall x$: student of mine)(John overheard the rumor that (x cheated))

a'. (John overheard the rumor that ($\forall x$: student of mine)(x cheated))

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[5] Extraction islands (Ross, 1967) are syntactic contexts within which it is difficult to make a noun phrase the questioned constituent in a wh-question. Example (i)a is a sentence containing a noun phrase. (i)a corresponds to (i)b, in which this noun phrase is questioned. (ii)a is a sentence containing a noun phrase in an extraction island, in this case, a conjoined noun phrase. (ii)b is the sentence that would result were it possible to question this noun phrase.

(i) a. The man saw $[\text{a cat}]_{NP}$.
b. What_i did the man see $Ø_i$?

(ii) a. The man saw $[[\text{a cat}]_{NP}$ and $[\text{a dog}]_{NP}]_{NP}$.
b.*What_i did the man see $[Ø_i$ and $[\text{a dog}]_{NP}]_{NP}$?

b. ($\exists x$: student of mine)(John overheard the rumor that (x cheated))

b'. (John overheard the rumor that ($\exists x$: student of mine)(x cheated))

Fodor & Sag examine such sentences in their 1982 paper. They point out that predicate logic translations of such sentences may put the existential quantifier corresponding to the indefinite outside of the extraction island: the quantifier may seemingly escape the island, unlike the quantifiers introduced by determiners such as *every*, *several*, or *Bob's*; compare (5)'a to (5)'b. They use this discrepant behavior to argue that island-escaping indefinites should not be interpreted via quantifier scoping at all. Rather, they argue that certain indefinite noun phrases are referential rather than quantificational. These are truth-conditionally equivalent to wide scope quantificational indefinites when there are no barriers to scope-taking, but such things as extraction islands distinguish the two varieties of indefinites. Like such referential expressions as proper nouns and demonstratives, referential indefinite noun phrases are unscoped and immune to the influence of scoped operators. Fodor & Sag choose to apply the label "specific" to wide scope quantificational indefinites; though by common usage it would seem that this term better applies to their referential indefinites.

More to our current point, in the sentences containing extraction islands the referential indefinites do not exhibit the full range of readings one would expect were they merely quantificational indefinites with unusual freedom to take scope. To illustrate, consider example (6), Fodor & Sag's (73) (the antecedent of a conditional is an extraction island).

(6) If a student in the syntax class cheats on the exam, every professor will be fired.

This sentence has interpretations (6)'a and (6)'c but not (6)'b, wherein the existential quantifier is intermediate in scope between the conditional and the universal quantifier.

(6)' a. (∀x: professor)((∃y: student)(y cheat) → (x fired))

b.*(∀*x*: professor)(∃*y*: student)((*y* cheat) → (*x* fired))

c. (∃*y*: student)(∀*x*: professor)((*y* cheat) → (*x* fired))

That is, (6) may mean that the entire faculty will lose their jobs if any student cheats, (6)'a, or that there is a particular student whose cheating will result in the firing of the entire faculty, (6)'c, but not that for every professor there is at least one student whose cheating will result in that professor's being fired, (6)'b. If we wish to capture specific interpretations of indefinite noun phrases via scoping mechanisms it is not as simple as allowing indefinites to take scope freely, as this overgenerates interpretations.

One complication to Fodor & Sag's account is that there are instances in which an indefinite may escape an extraction island yet still not have maximal scope; this occurs, for example, when the extraction island is in the scope of epistemic predicates. Consider (7).

(7) Mary thinks John believes that if a student disrupts the syntax exam, every professor will be fired.

Imagine that John believes that a particular student is such that his misbehavior could cause this mass firing; and imagine that Mary thinks John has this belief, but she herself does not know which is the dangerous student. In this state of affairs (7) clearly has the interpretation described by the formula in (7)'.

(7)' (*m* believe)[(∃*y*: student)(*j* believe)[(∀*x*: professor)((*y* disrupt exam) → (*x* fired))]]

Apparently Fodor & Sag's referential indefinites need not take maximally wide scope. Rather, we might hypothesize that they must take wide scope with respect to all

but epistemic operators. If we take Fodor & Sag's explanation of "referential" indefinites seriously, this special behavior with respect to epistemic operators makes perfect sense. Reference conceived of as an act requires an agent referring as well as a thing referred to. Any function determining the referent of a referential noun phrase of any sort, therefore, is dependent on this agent. The way a dependence between two variables is indicated in predicate logic is just by putting the operator binding the dependent variable within the scope of the operator binding the other. This holds so long as the free variable is not the argument of an epistemic verb. As discussed earlier, whenever an epistemic operator is applied to a subformula containing terms denoting particular individuals, as in (*m* believe)[(*c* disrupt exam)], this indicates a *de re* belief. If an individual has a *de re* belief, she believes she may individuate the object of her belief via some process not dependent on the property predicated of this object in this particular belief, and that the property predicated just happens also to hold of the object. There is necessarily some function from that cognizer to the object of her belief; there is a dependence between the term denoting the object and the term denoting the believer. Hence the relative scope of the operators in (7)': the dependent variable must be bound by a quantifier having a scope just wider than the inner epistemic operator; this allows it to escape dependence on all the operators within the epistemic operator's scope. This explanation, I suggest, is a clue towards a more adequate theory of specificity.

4.3 INDEXED CHOICE FUNCTIONS

Let us return to example (1).

(1) Sally thinks Mark would like to meet a golfer.

a'. (*i* posit)[(*i* assert)[(*s* think)[(*m* like)[(∃*x*: golfer)(*m* meet *x*)]]]]

b'. (*i* posit)[(*i* assert)[(*s* think)[(∃*x*: golfer)(*m* like)[(*m* meet *x*)]]]]

c'. (i posit)[(i assert)[($\exists x$: golfer)(s think)[(m like)[(m meet x)]]]]

d'. (i posit)[($\exists x$: golfer)(i assert)[(s think)[(m like)[(m meet x)]]]]

e. ($\exists x$: golfer)(i posit)[(i assert)[(s think)[(m like)[(m meet x)]]]]

There are two things I would like to say about the interpretations represented in (1). First of all, this is an unpleasing profusion of interpretations for this single sentence. One would prefer that there be a simpler correspondence between the syntactic and the semantic representation of (1). Ideally, there would be some single most general sense to (1) which would be compatible with all the other interpretations and some process of inference by which the particular interpretation appropriate to the context might be derived. Try as one might, though, one can find no such formula among those listed with (1). (1) does not entail that there are any golfers, so (1)e is out. Similarly, it does not entail that the speaker believes or asserts that there exist any golfers, nor that Sally or Mark does. This leaves only (1)a', but (1) does not entail that Mark have any desire concerning golfers, nor even any awareness that golfers might exist, so it cannot entail (1)a', either. By induction, one can show that no elaboration of any of these formulas with additional performative predicates gets one any closer to a universal, most general interpretation. Second, corresponding to the five interpretations of (1) there are three "epistemic agents" of one sort or another who may "have a bead" on the postulated golfer: for (1)a', no one need be able to identify this entity; for (1)b', at least Mark is thought to have a means of identifying it; for (1)c', at least Sally and Mark are thought to have a means; and for (1)e, at least the speaker has a means, and she believes Sally and Mark also to have such means. (1)d' is useful in opposition to (1)e, because the pair separate belief in the existence of the golfer from knowledge of her identity. For the other examples these two issues are muddled, but I will set that aside for now and concentrate

only on knowledge of identity. We may represent this information in a chart, using '+' to signify the (alleged) possession of a means of identification of the golfer.

	Mark	Sally	**S**
1a'			
1b'	+		
1c'	+	+	
1d'	+	+	
1e	+	+	+

table 1: who knows the golfer

Table 1 captures all the information conveyed regarding knowledge of identity by the scoping of the existential quantifier in the interpretations of (1). Rather than using the notation of formulas (1)a'–e, therefore, one might use something like an existential quantifier which had appended to it indices for all the individuals with knowledge of the entity in question. This would not eliminate the issue of existence — again, I am setting that aside for the moment as a separate issue. It would eliminate at least one performative predicate from the logical representation of (1); two predicates were needed to provide scopings such that one could distinguish the speaker's belief in the existence of a golfer from her knowledge of the golfer's identity. (1)c', for instance, could be rewritten as (1)c".

(1) c". (s think)[(m like)[($\exists_{s,\, m}x$: golfer)(m meet x)]]

In this representation, both performative predicates are gone. Indexation allows us to avoid the double performative hypothesis objection to the scopal account (though one performative might have to be reintroduced to account for beliefs in the existence of the referent).

Note that this indexed notation can do without quantifier raising, at least in dealing with (non)specificity. The function of scope is to indicate the dependence between the choice of a value for a variable and other such choices. $(\exists x)(\forall y)(x\ \phi\ y)$

differs from $(\forall y)(\exists x)(x\text{-}\phi\ y)$ in that the choice of a value for x is dependent on the choice of a value for y in the second formula but not in the first. This is reflected in the possibility of rewriting the second formula with a Skolem function: $(\exists f)(\forall y)(f(y)\ \phi\ y)$. The choice of a Skolem function is independent of the choice of any particular value for y, but the value of this function for a particular value of y remains dependent on the value of y. In the interpretations of (1), this dependence amounts to a dependence between the choice of a value for x and the epistemic agents who can make this choice. Because (1)c" represents this information with indexation, scope is redundant. Indexation thus eliminates the meanings overgenerated by the scopal hypothesis: the non-occurring middle scoping discussed by Fodor & Sag. Because any cognizer may be represented by an index, indexation also eliminates the undergeneration which Fodor & Sag's account is susceptible to.

(1)c" retains a remnant of quantifier raising: it appears that the quantifier has been raised out of the lowest predicate, *meet*. To be completely consistent, we could represent existential quantification via a choice function à la Reinhart (1997).

(1) c'''. $(\exists f)(s \text{ think})[(m \text{ like})[(m \text{ meet } f_{s,\,m}(\text{golfer}))]]$

This formula says that there exists a function, whose value for a particular argument is dependent on the properties of the individuals s and m, which maps a predicate onto some individual in the extension of that predicate[6], and that it is true that Sally thinks Mark would like to meet this individual. I have included the existential quantifier in (1)c", but the marking of scope it effects is entirely redundant, given that all the necessary variables

[6] This is how choice functions work as Reinhart describes them. This rules out referential readings of noun phrases, whereby the referent of the noun phrase may not be in its extension proper. This may be the appropriate treatment, but it would not be terribly difficult to absorb referential uses into the choice function interpretation. This would amount to saying that choice functions may be functions from noun

are captured through the subscripts on the function variable. (1)c''' could thus be represented as in (1)c''''.

(1) c''''. (s think)[(m like)[(m meet $f_{s,\,m}$(golfer))]]

This in turn suggests a maximally general representation for the meaning in (1),

(1) f. (s think)[(m like)[(m meet f(golfer))]]

This formula means that there is some choice function over the individuals in the extension of the predicate *golfer* such that Sally thinks that Mark would like to meet this individual. This does not entail that anyone has a *de re* belief about this individual or any belief about golfers; any such dependency is left unspecified. It would seem, therefore, that (1)f could stand as a representation of the literal meaning of (1) which could be contextually enriched to any of (1)a'–e. This indexed choice functional notation thus eliminates the perspicuity objection to the scopal account of specificity.

In sum, an indexed choice functional notation eliminates almost all the objections of the preceding discussion: the additional performatives, the over- and under-generation of scopes, and the non-perspicuity of the notation. The range of interpretations of (1)f may be limited to all and only those which are appropriate by stipulating that the only variables or constants that may be subscripted to f are those that refer to cognizers, if any are subscripted at all. If none are subscripted, no choice function, and thus no dependency on the choice of other variables, is ruled out. One problem remains for the indexed account from the earlier list: beliefs regarding existence and identity remain entangled. If the reader will recall, the rational implicature account of the indefinite article concerns identity only and treats existence as a conversational implicature in those contexts in

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phrases to individuals—that is, not functions from noun phrases to individuals in those noun phrases' extensions.

which it seems to be entailed (§ 2.4.1). The relationship of specificity to implications of existence will be discussed further in the next chapter (§ 5.3.1.1).

It may strike the reader that we have returned by lengthy argumentation to the very point from which we began: (in)definite articles are represented via a choice function determined by the preferences of participants in the speech act. This is not quite so. In the rational implicature choice functional account, the subscript, preceded by a '+' or a '–', indicates *whether the speaker would be satisfied by* a choice function determined by the indexed individual's preferences. I have introduced the indexed choice function notation of this chapter to clarify what is at stake in an analysis of specificity. I will introduce what I mean to be the rational implicature analysis of the (non)specific determiners and thus, implicitly, specificity in the next two chapters.

Chapter 5: *certain*

In this chapter I shall study the specific determiner *certain*. Because *certain* is the least determiner-like of the four expressions studied in this dissertation, one might question its inclusion in a four-way semantic paradigm that otherwise only includes determiners. I shall begin this chapter, therefore, by examining the categorial status of *certain*, § 5.1. Another difficulty which involves *certain* uniquely is that its empirical properties are not generally agreed upon in the linguistic literature: it is little studied at all. In the second section of this chapter, § 5.2, I shall attempt to remedy this by providing a detailed corpus-based study of the distribution and uses of *certain*. In the third section, § 5.3, I shall examine analyses of *certain* and analyses of specificity which might be adapted as analyses of *certain*. The commonality among these is that they all interpret *certain* as involving a selection by the speaker of a referent for the *certain* noun phrase. I shall conclude this section by presenting the rational implicature account. Its chief advantage over the other accounts are that it predicts the presupposition of existence inherent in *certain* and it predicts the association between *certain* and indefiniteness. In the final section, § 5.4, I present complexities in the data regarding the acceptability of *certain* in irrealis contexts. I show that these may be explained by *certain*'s being relativized to an epistemic agent, not the speaker per se, and by *certain*'s involving the speaker's satisfaction with some choice function rather than her knowledge of it. The goal of this chapter is just to show what the semantics of a determiner interpreted via a choice function with the restriction +**S** should be and that in English *certain* is such a determiner.

5.1 THE CATEGORIAL STATUS OF *CERTAIN*

The four words I am studying, *the*, *a*, *certain*, and *any*, are all uncontroversially determiners, all of them, that is, except *certain*. By appearances, *certain* is an adjective. Consider: *Certain* may be a constituent in a phrase that combines with a determiner to form a noun phrase: $[_{NP}$a $[_{N'}$ [certain] old hat$_{N'}]_{NP}]$. It appears to be in the same syntactic relation to the N' as an adjective in that it may be replaced by an adjective in this position: *a certain/green/odoriferous hat*. It is homographic and homophonous with and etymologically related to the word *certain* in phrases such as *I am certain that it was Bob*. This word is an adjective. It is not obviously semantically distinct from the words *specific* and *particular* which contain derivational suffixes indicating their adjectival status: {-ic}, as in *terrific*, *monolithic*, and *parabolic*; and {-ar }, as in *columnar*, *insular*, and *regular*. This group of words, *certain*, *specific*, and *particular*, are in fact often referred to as adjectives of specificity. The "specific" part of this designation has been disputed by various authors (Fodor & Sag, 1982; Enç, 1991) — we will return to this issue shortly —, but not the "adjective" part. Other authors (Hornstein, 1998a,b, 1988; Hintikka, 1986) have preferred to treat *certain*, in the construction *a certain*, as part of a determiner in the same way that Keenan & Stavi, for example, treat the expression *more than five* as a determiner (Keenan & Stavi, 1986). These scholars represent a school of thought wherein the categorial status of a word is determined wholly by its semantics; this is not the majority school among linguists. Still, if *certain* is an adjective this makes it difficult to identify the words examined in this dissertation as a homogenous group apart from the particular analysis of them that I present. While this would not be a very grave flaw in my general argument were it so, mine being a semantic analysis, the syntactic status of *certain* is nonetheless an issue which bears some comment. I shall show that its status is not at all, pardon the expression, certain.

5.1.1 adjectives of specificity are more determiner-like than other adjectives

First of all, let us consider the properties of the class of adjectives of specificity as a whole. They are not the most prototypical of adjectives. They are among the modifiers of a noun ordered farthest from the head, outside of value, dimension, physical properties, speed, human propensities, age, and color, according to Dixon's classification (Dixon, 1982).

(1) a.*a red certain book

b.*a fast particular horse

c.*a strong specific horse, etc.

In this respect, they are similar to determiners, which are always the farthest element in the noun phrase from the noun.

The adjectives of specificity also have only a positive degree, no comparative, superlative, or equative.

(2) a.*a more certain book

b.*a most particular book

c.*as specific a book as any other

Again, this is a property which makes the adjectives of specificity dissimilar to run-of-the-mill adjectives and similar to determiners. It could be said that this is only because

the adjectives of specificity are not scalar.[1] My attempt is only to establish a family resemblance between adjectives of specificity and determiners and a lack of resemblance between adjectives of specificity and most other adjectives. I am not so concerned just yet what creates this resemblance or lack thereof. Compare the felicity of the examples in (2), however, to their analogues with other non-scalar adjectives.

(3) a. a more pregnant woman
b. a most false statement
c. as dead a corpse as any other

Logically these uses of non-scalar adjectives do not make much sense, but they have a common figurative use. A more pregnant woman is a woman whose pregnancy is more apparent. A most false statement is a statement which is inarguably false. A corpse which is as dead as any other is a corpse which could not be mistaken for a moribund person. The adjectives of specificity do not have an equivalent figurative use.

Another respect in which they are similar to determiners and dissimilar to the majority of adjectives is that the adjectives of specificity cannot be used predicatively.

(4) a.*This book is the/certain/particular/specific.
b. His friends are few/tall/green/counterfeit/*former.

Again, this may be regarded merely as a lack of family resemblance.

5.1.2 *certain* is more determiner-like than other adjectives of specificity

If we consider the properties of *certain* in comparison to the other adjectives of specificity, we find that it is the least like an adjective and the most like a determiner of the three.

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[1] This explanation was pointed out to me by Jean-Pierre Koenig.

Certain cannot cooccur with determiners other than *a*, unlike *particular* and *specific*.

(5) a.?He was looking for <u>some certain book</u>.

b. He was looking for <u>some specific book</u>.

c.?This is the certain book he was looking for.

d. This is the particular book he was looking for.

e.?He wasn't looking for <u>any certain book</u>.

f. He wasn't looking for <u>any specific book</u>.

Note that in this respect *certain* bears a superficial resemblance to determiners which also may occur with another determiner, usually one or the other of the (in)definite articles. Some such determiners are *all*, *couple*, *few*, and all the cardinal numerals[2], as in *all the books*, *a couple books*, *a few books*, and *the two books.*

Certain is ordered outside of the other adjectives of specificity when they occur redundantly, to the extent that this is possible at all.

(6) a.?a certain specific book

b.*a specific certain book

(7) If by "Monday" I mean a recurring period of time (the first or second day of the week, depending on how you count) rather than <u>a certain particular day</u>, it is intensional. (Carlson, 1989; p. 181; emphasis added)

Certain may be used pronominally, like many determiners but unlike any other attributive adjective, so far as I am aware, including the other adjectives of specificity.

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[2] The cardinal numerals might be considered adjectives. They are determiner-like adjectives if they are adjectives, however. For example, *a group of two ducks* does not mean "a group of ducks, each of which is two". Compare this to *a group of scattered ducks*. It is not difficult to conceive of a group of ducks which is scattered, but this is not what the phrase means. Rather, it means "a group of ducks, each of which is scattered", which is semantically anomalous. Now consider the determiner *many. A group of many ducks* means "a group containing or consisting of many ducks", not "a group of ducks, each of which is many". The adjective *scattered*, like the determiner and the numeral, is a second order property, yet the adjective

(8) a. Certain of you have questioned my actions.

b. Several of you have questioned my actions.

c. All of you have questioned my actions.

d. Some of you have questioned my actions.

e.*Specific of you have questioned my actions.

f.*Red of you have questioned my actions.

g.*Tall of you have questioned my actions.

h.*Good of you have questioned my actions.

But it seems that *certain* behaves like a pronoun only in this single construction. It cannot, for instance, occur as the subject or object of a verb or as the response to a focus question.[3]

(9) a. Some/All/Several/Two/Many/Few have come to see me.

b.*Certain have come to see me.

(10) Have you seen the ducks?

a. I saw some/several/two/many on the water right there.

b.*I saw certain on the water right there.

(11) How many students came to see you?

a. Some/Several/Two.

b.*Certain.

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must be understood distributively, which is anomalous, while the determiner and *two* are understood as applying to the collection.

[3] Just what one is to make of these points is not obvious, as many of the canonical determiners in English, such as *the*, *a*, *every*, and *no*, have no pronominal uses; though they may have had such uses in the past and their analogs do in other languages. Furthermore, sensitivity to syntactic context is common among pronominal determiners. For my purposes, all that bears noting is that no attributive adjectives other than *certain* ever function as pronouns and many determiners do.

Though there seems to be dialectal variation on this point, for some, *certain* is polarity sensitive, like some determiners but unlike any other attributive adjectives, including the other adjectives of specificity. In all of the following cases, *certain* must, or at least tends to, have wide scope with respect to the negative polarity context, whereas no such restriction holds for *particular* and *specific*. For each of the examples below, I provide a continuation or amplification which suggests an appropriate context. The context for *certain* demands wide scope for the noun phrase, whereas that for *particular*/*specific* strongly suggests narrow scope. To see this, one may consider the felicity of the discourses that result when one swaps the continuations in a particular pair of sentences: the examples with *certain* do not accept, or do not accept easily, the other parenthetical.

(12) <u>negation</u>

a. I'm not looking for <u>a certain book</u>. (But if you have it, I just might buy it.)

b. I'm not looking for <u>a particular</u>/<u>specific book</u>. (I just want a book.)

(13) <u>question</u>

a. Are you waiting for <u>a certain person</u>? (Because he won't be coming.)

b. Are you waiting for <u>a particular</u>/<u>specific person</u> (or just someone)?

(14) <u>antecedent of a conditional</u>

a. If you press <u>a certain button</u> (as opposed to the others), the door will open.

b. If you press <u>a particular</u>/<u>specific button</u> (instead of mashing down the entire keypad), the door will open.

(15) <u>modal</u>

a. I might need <u>a certain book</u>. (Let's see… What was it called?)

b. I might need <u>a particular</u>/<u>specific book</u>. (But maybe any book will do.)

(16) command

a. At the party, look a certain person in the eye. (That'll let him know that we're onto him and he should cool it.)

b. At the party, look a particular/specific person in the eye. (Otherwise, they'll think you're duplicitous, shy, or demented.)

5.1.3 conclusion: *certain* is an adjective becoming a determiner

Purely attributive adjectives[4] are more like determiners than are adjectives which may also be used predicatively. The adjectives of specificity are more like determiners than are other purely attributive adjectives. Of the adjectives of specificity, the adjective *certain* is most determiner-like of all. What are we to conclude is the categorial status of *certain*? I offer the hypothesis that it is an adjective in the process of becoming a determiner (whether this change is semantic or syntactic is a matter which I will not debate). Other adjectives have followed the same path; *several* and *any*, for example. The etymology and historical citations of *certain* are relevant to this hypothesis; I provide below a portion of the entry of *certain* in the Oxford English Dictionary, Second Edition, copyright 1989.

> **Certain** …
> [a. OFr. *certain* (= Pr. *certan*, Sp. and It. *certano*), repr. late L. or Romanic type *certān -us*, *certān-o*, f. *cert-us* determined, settled, sure, orig. pa. pple. of *cernēre* to decide, determine, etc. The sense development had taken place already with L. *certus*. The comparative and superlative, *certainer*, *certainest*, are of common occurrence up to the middle of 18th c., but are now seldom used.]
> **A**. *adj*. **I**. **1**. **a**. Determined, fixed, settled; not variable or fluctuating; unfailing. To avoid ambiguity from confusion with sense 7, the adj. is sometimes put after its sb., as *a certain day*, *a day certain*.
> …
>
> **1297** R. GLOUC. (1724) 378 To a man to bere þeruore a certeyne rente by þe ȝere. **1461-83** *Lib. Niger Eds. IV* in *Ord. R. Housch.* (1790) 18 A formal and convenient custume more certayne than was used byfore his tyme. **1597** MORLEY *Introd. Mus.* 6 Musicke is included in

[4] This is a syntactic category. I identified attributive uses of *certain* by the fact that the word was acting as a modifier to a noun.

> no certaine bounds. **1597** HOOKER *Eccl. Pol.* v. lxvii. §5 That which produceth any certain effect. **1631** WEEVER *Anc. Fun. Mon.* 384 The number of them hath not beene certaine in our dayes: at this time there are about sixty and eight. In former ages, they were but twelue. **1670** MILTON *Hist. Eng.* II. 500 Wandering up and down without certain seat. **1741** T. ROBINSON *Gavelkind* v. 79 A Fair or Market with Toll certain. …
>
> …
>
> **II**. **7**. **a**. Used to define things which the mind definitely individualizes or particularizes from the general mass, but which may be left without further identification in description; thus often used to indicate that the speaker does not choose further to identify or specify them; in *sing*. = a particular, in *pl*. = some particular, some definite.
>
> Different as this seems to be from sense 1, it is hardly separable from it in a large number of examples: thus, in the first which follows, the *hour* was quite 'certain' or 'fixed', but it is not communicated to the reader; to him it remains, so far as his knowledge is concerned, quite indefinite; it may have been, *as far as he knows*, at any hour; though, *as a fact*, it was at a particular hour. …
>
> *a* **1300** *Cursor M.* 8933 Ilk dai a certain hore! Þar lighted dun of heuen ture Angels. **138**. WYCLIF *Wks.* (1880) 220 How religious men should kepe certayne Articles. …
>
> …

First consider the etymological information. *Certain* descends from the perfect participle of the Latin verb *cernere* 'to decide, determine, etc.' This meaning remains little changed in the first of the two related definitions of *certain* that I have excerpted: "determined, fixed, settled; not variable or fluctuating; unfailing." In this definition, *certain* behaves like an ordinary adjective, occurring in attributive, predicative, and even post-modifier positions; following a variety of determiners — *a*, *no*, and *any* are attested in the citations listed; and judging from the etymological information and the second citation, having other degrees of comparison than just the positive. It seems fair to presume that this meaning is the older of the two, as it preserves faithfully the meaning of the Latin source. The OED does not provide any citations of this form after 1670 except in post-modifier position or in attributive position in an idiom having to do with monetary exchange rates. The second definition I have excerpted provides the meaning of the modern *certain* that is of interest in this dissertation. It is very nearly the definition I wish to argue for: "used to define things which the mind definitely individualizes or particularizes from the general mass, but which may be left without further identification in description" and so forth. The OED does not provide any citations for *certain* under this definition which counter-exemplify any of the generalizations I cited previously. Note that the OED says *certain* under the first definition is sometimes put into post-

modifier position lest it be confused with *certain* under the second definition, and recall the pattern of use evident in the citations the OED provides for the first definition. It appears that the second use of *certain* has evolved from and come to supplant the first. This does not demonstrate that *certain* is evolving into a determiner, but it does appear that *certain* is in the process of evolving away from more prototypical adjectival uses. As to whether or not *certain* is already a determiner, any definitive test will have to be stipulative. The OED does not recognize a category of determiner at all, listing even *a*, *the*, and *no* as varieties of adjective. In any case, nothing in this dissertation crucially depends on *certain*'s being a determiner. But presuming it is united with the other three expressions in a common semantic paradigm, one might expect them to be united in a common syntactic paradigm as well.

5.2 THE EMPIRICAL FACTS

Let us consider now the empirical facts about *certain* that may allow us to determine its semantics. Very little has been written about *certain* per se. Unlike the (in)definite determiners, therefore, I cannot rely in my description of *certain* primarily on empirical facts established in previous linguistic literature. Instead, I have used a corpus-based approach. I acquired ten electronic texts: Frankenstein, by Mary W. Shelley (F); the Jungle, by Upton Sinclair (J); Main Street, by Sinclair Lewis (MS); Independence, chapter 3, by John Stuart Mill (I); Moby Dick, by Herman Melville (MD); the Portrait of a Lady, by Henry James (PL); The Invisible Man, by H. G. Wells (IM); Through the Looking Glass, by Lewis Carroll (LG); Cross-Cultural Traces of Vedic Civilization, by Sadaputa Dasa (VC); and the Wildlife Act of 1982 (WA). Aside from I, VC, and WA, all of these texts are novels. I is a philosophical text, VC, an essay on the Vedic religion, and WA, a legal document. In addition to the text of the novels by their authors, I have included in these corpora the legal disclaimers and other text added by those who transcribed the texts into electronic form. I obtained these documents from the electronic

text collection at the University of Virginia. Most of them were converted into electronic form by Project Gutenberg. I have selected these texts more or less at random. I sought the more modern texts, but copyright laws make the most recently published texts unavailable. The ten texts I used contain something over 950,000 words. From these I extracted all of the attributive uses of *certain*, 233 instances, and examined them in their contexts of use. Among these, certain intuitively distinguishable categories of use were apparent. These were, roughly in order of frequency,

- indicating a loss for words — "a certain je ne sais quoi"
- alluding to withheld knowledge — "a certain party told me what you said"
- indicating that particular knowledge is hearsay — "It is upon record that … a certain cook of the court …"
- understating/hedging — "you evince a certain reluctance"
- restricting generalization — "Mondays he used to go into town with a certain friend" (NOT "some friend or other")
- allusion to mutual knowledge kept off public record— "a woman of a certain age"

In addition to these uses evident in the electronic texts, certain other uses and properties have either been noted in the linguistic literature or are fairly obvious to any observer:

- indicating mere acquaintance — "a certain Frank Purefoy is here to see you"
- *certain* eschews negative polarity and other irrealis contexts (Haspelmath, 1997) — *"I did not see a certain person"
- *certain* cannot occur in a predicate nominal — *"Clarice is a certain baker"

Related to the second of these, the eschewal of negative polarity and irrealis contexts, is a hypothesis put forward by Hornstein (1984a,b, 1988) that *certain* is representative of a class of operators that must take widest scope,

• wide scope hypothesis — "Every man sees a certain woman" ≠ ∀man∃woman…

Finally, a number of authors have noted a similarity in meaning between *certain* and other so-called adjectives of specificity.

• similarity to particular, specific, determinate, etc.

I will now examine each of these generalizations in turn. For each I will provide a list of instances drawn from the electronic texts, when such are available, and I will characterize what is common across these instances. I will present a great many examples for many of these categories. I do this so that the reader may get an intuitive feel for the categories of which I speak. The reader is welcome to skip to the discussion if the nature or validity of the category is obvious. It should also be borne in mind that these uses are not necessarily mutually exclusive. Particular examples chosen to illustrate one use may also with some facility illustrate another. Furthermore, I am not arguing that *certain* is polysemous and that every use described corresponds to a different meaning. This would be quite a difficult position to defend, as many of the uses differ from others only in emphasis or subtle aspects of context.

5.2.1 loss for words

Under this usage, *certain* participates in indicating that the speaker has a particular notion or impression she wishes to convey but she is not sure she has found the right words to convey it.

(17) As I walked away, I was full of thoughtfulness; what had been incidentally revealed to me of Captain Ahab, filled me with a certain wild vagueness of painfulness concerning him. (MD51)

(18) But once, the mood was on him too deep for common regardings; and as with heavy, lumber-like pace he was measuring the ship from taffrail to mainmast, Stubb, the old second mate, came up from below, with a certain unassured, deprecating humorousness, hinted that if Captain Ahab was pleased to walk the planks, then, no one could say nay; but there might be some way of muffling the noise; hinting something indistinctly and hesitatingly about a globe of tow, and the insertion into it, of the ivory heel. (MD74)

(19) Nor can it be questioned from what stands on legendary record of this noble horse, that it was his spiritual whiteness chiefly, which so clothed him with divineness; and that this divineness had that in it which, though commanding worship, at the same time enforced a certain nameless terror. (MD109)

(20) To some the general interest in the White Whale was now wildly heightened by a circumstance of the Town-Ho's story, which seemed obscurely to involve with the whale a certain wondrous, inverted visitation of one of those so called judgments of God which at times are said to overtake some men. (MD135)

(21) It is worse; for you cannot sit motionless in the heart of these perils, because the boat is rocking like a cradle, and you are pitched one way and the other, without the slightest warning; and only by a certain self-adjusting buoyancy and simultaneousness of volition and action, can you escape being made a Mazeppa of, and run away with where the all-seeing sun himself could never pierce you out. (MD155)

(22) When he halted before the binnacle, with his glance fastened on the pointed needle in the compass, that glance shot like a javelin with the pointed intensity of his purpose; and when resuming his walk he again paused before the mainmast, then, as the same riveted glance fastened upon the riveted gold coin there, he still wore the same aspect of nailed firmness, only dashed with a certain wild longing, if not hopefulness. (MD228)

(23) For nothing was this man more remarkable, than for a certain impersonal stolidity as it were; impersonal, I say; for it so shaded off into the surrounding infinite of things, that it seemed one with the general stolidity discernible in the whole visible world; which while pauselessly active in uncounted modes, still eternally holds its peace, and ignores you, though you dig foundations for cathedrals. Yet was this half-horrible stolidity in him, involving, too, as it appeared, an all-ramifying heartlessness;— yet was it oddly dashed at times, with an old, crutch-like, antediluvian, wheezing humorousness, not unstreaked now and then with a certain grizzled wittiness; such as might have served to pass the time during the midnight watch on the bearded forecastle of Noah's ark. (MD246)

(24) A peculiar walk in this old man, a certain slight but painful appearing yawing in his gait, had at an early period of the voyage excited the curiosity of the mariners. (MD254)

(25) These are the times, when in his whale-boat the rover softly feels a certain filial, confident, land-like feeling towards the sea; that he regards it as so much flowery earth; and the distant ship revealing only the tops of her masts, seems

struggling forward, not through high rolling waves, but through the tall grass of a rolling prairie: as when the western emigrants' horses only show their erected ears, while their hidden bodies widely wade through the amazing verdure. (MD257)

(26) This person had a certain fortunate, brilliant exceptional look— the air of a happy temperament fertilized by a high civilization— which would have made almost any observer envy him at a venture. (PL2)

(27) "She has been very kind to me; but," she added with a certain visible eagerness of desire to be explicit, "I'm very fond of my liberty." (PL12)

(28) This person, however, improved on acquaintance, and Ralph grew at last to have a certain grudging tolerance, even an undemonstrative respect, for him. (PL23)

(29) Her nature had, in her conceit, a certain garden-like quality, a suggestion of perfume and murmuring boughs, of shady bowers and lengthening vistas, which made her feel that introspection was, after all, an exercise in the open air, and that a visit to the recesses of one's spirit was harmless when one returned from it with a lapful of roses. (PL32)

(30) It was because a certain ardour took possession of her—a sense of the earnestness of his affection and a delight in his personal qualities. (PL281)

(31) It was only when they had been left alone together that her friend showed a certain vague awkwardness—sitting down in another chair, handling two or three of the objects that were near him. (PL315)

(32) Isabel presently became aware that one of the other visitors, planted in the middle of the arena, had turned his attention to her own person and was looking at her with a certain little poise of the head which she had some weeks before perceived to be characteristic of baffled but indestructible purpose. (PL346)

From examining these examples, one can come to further generalizations about the loss-for-words usage of *certain*. The other evidence that one has in these instances that the speaker is in some sense at a loss for words is the additional, often very particular and even redundant, description the speaker provides. In many of these examples, *certain* is followed by a list of adjectives; consider (18), (20)–(21), (24)–(26), and (29). In other cases, the speaker provides complete rephrasings or alternatives to the original description: (26), (28)–(31). In still other cases, the speaker mentions explicitly the lack of words to describe the situation at hand; consider (17), (19), and (31). Examples (22) and (23) have more elaborate metalinguistic commentaries on the provisionality of the speaker's words.

5.2.2 knowledge withheld

When the speaker uses *certain* to indicate that knowledge is withheld, she is indicating that she has detailed information regarding the topic at hand which she is not presenting, generally because she does not regard it as relevant to the point she is making, or presenting it would require more effort than its relevance could justify. The other common reason for withholding information from the hearer is that this information is damaging or embarrassing to some party to the conversation.

(33) I submitted all this to my friends Simeon Macey and Charley Coffin, of Nantucket, both messmates of mine in a certain voyage, and they united in the opinion that the reasons set forth were altogether insufficient. (MD78)

(34) Nevertheless, as upon the good conduct of the harpooneers the success of a whaling voyage largely depends, and since in the American Fishery he is not only an important officer in the boat, but under certain circumstances (night watches on a whaling ground) the command of the ship's deck is also his; … (MD83)

(35) For like certain other omnivorous roving lovers that might be named, my Lord Whale has no taste for the nursery, however much for the bower; and so, being a great traveller, he leaves his anonymous babies all over the world; every baby an exotic. (MD210)

(36) And even in the days of Banks and Solander, Cooke's naturalists, we find a Danish member of the Academy of Sciences setting down certain Iceland Whales (reydan-siskur, or Wrinkled Bellies) at one hundred and twenty yards; that is, three hundred and sixty feet. (MD242)

(37) "No, I'm not in love with her; but I should be if— if certain things were different." (PL119)

(38) "My reason for coming to Iping," he proceeded, with a certain deliberation of manner, "was—a desire for solitude. I do not wish to be disturbed in my work. In addition to my work, an accident—"
"I thought as much," said Mrs. Hall to herself.
"—necessitates a certain retirement." (IM6)

(39) It is unavoidable that at this point the narrative should break off again, for a certain very painful reason that will presently be apparent. (IM33)

(40) "He has made me keep with him twenty-four hours," Marvel testified. Certain minor facts were added to the Iping story, notably the cutting of the village telegraph-wire. (IM54)

(41) "I will tell you, Kemp, sooner or later, all the complicated processes. We need not go into that now. For the most part, saving certain gaps I chose to remember, they are written in cypher in those books that tramp has hidden."
(IM59)

(42) "After I'd given the stuff to bleach the blood and done certain other things to her, I gave the beast opium, and put her and the pillow she was sleeping on, on the apparatus." (IM60)

(43) "See here: Hasn't Kennicott ever hinted to you that you'd better be nice to some old woman because she tells her friends which doctor to call in? But I oughtn't to — — "
She remembered certain remarks which Kennicott had offered regarding the Widow Bogart. (MS159)

(44) Before Harry could answer she threatened that Ray and she would start a rival shop. "I'll clerk behind the counter myself, and a Certain Party is all ready to put up the money." (MS260)

There are various other forms of evidence beyond the occurrence of *certain* from which one may infer that the speaker is deliberately withholding information. In some cases, the possession of this additional information by the speaker is inferable from the situation described: it is an event she witnessed personally, for example. Examples of this are (33), and (42)–(44). In other cases, examples of the withheld knowledge are presented after the *certain* NP: (34), (36), (40). In other cases, the withheld knowledge is merely alluded to: (35), (39), (41). In a few cases, one may infer the speaker's possession of withheld knowledge from her failure to respect the Gricean maxim of quantity; her utterance is unusually vague and uninformative: (37), (38).

5.2.3 hearsay

Under this usage, *certain* participates in conveying that the speaker's information is dependent upon a third party's testimony or authority.

(45) The people of his island of Rokovoko, it seems, at their wedding feasts express the fragrant water of young cocoanuts into a large stained calabash like a punchbowl; and this punchbowl always forms the great central ornament on the braided mat where the feast is held. Now a certain grand merchant ship once touched at Rokovoko, and its commander— from all accounts, a very stately punctilious gentleman, at least for a sea captain— this commander was invited

to the wedding feast of Queequeg's sister, a pretty young princess just turned of ten. (MD40)

(46) I was already aware that in the whaling business they paid no wages; but all hands, including the captain, received certain shares of the profits called lays, and that these lays were proportioned to the degree of importance pertaining to the respective duties of the ship's company. (MD49)

(47) It is upon record, that three centuries ago the tongue of the Right Whale was esteemed a great delicacy in France, and commanded large prices there. Also, that in Henry VIIIth's time, a certain cook of the court obtained a handsome reward for inventing an admirable sauce to be eaten with barbacued porpoises, which, you remember, are a species of whale. (MD164)

(48) Stubb here alluded to a strange story told of the Jeroboam, and a certain man among her crew, some time previous when the Pequod spoke the Town-Ho. According to this account and what was subsequently learned, it seemed that the scaramouch in question had gained a wonderful ascendency over almost everybody in the Jeroboam. (MD171)

(49) And this reminds me that certain Englishmen, who long ago were accidentally left in Greenland by a whaling vessel— that these men actually lived for several months on the mouldy scraps of whales which had been left ashore after trying out the blubber. (MD164)

(50) Moreover, at a place in Yorkshire, England, Burton Constable by name, a certain Sir Clifford Constable has in his possession the skeleton of a Sperm Whale, but of moderate size, by no means of the full-grown magnitude of my friend King Tranquo's. (MD238)

(51) He called one to him in the grey morning watch, when the day was just breaking, and taking his hand, said that while in Nantucket he had chanced to see certain little canoes of dark wood, like the rich war-wood of his native isle; … (MD251)

(52) The word came by long-distance telephone in a cipher code, just a little while before each race; and any man who could get the secret had as good as a fortune. If Jurgis did not believe it, he could try it, said the little Jew—let them meet at a certain house on the morrow and make a test. (J163)

(53) He was not sure that he could manage the "sheeny," and he did not mean to take any chances with his district; let the Republicans nominate a certain obscure but amiable friend of Scully's, who was now setting tenpins in the cellar of an Ashland Avenue saloon, and he, Scully, would elect him with the "sheeny's" money, and the Republicans might have the glory, which was more than they would get otherwise. (J164)

In these instances, that we are dealing with the hearsay use of *certain* is made clear by reference to the third hand source, (48), (49), (52), (53), reference to the existence of the source, (45), (46), reference to the indirectness of the speaker's knowledge, (46), or the improbability that the speaker has direct knowledge, (49), (50).

5.2.4 understating/hedging

Certain is often used when the speaker wishes to make an understatement or hedge an utterance, alluding, but only alluding, to a more complete, precise statement of her beliefs.

(54) For such is the wonderful skill, prescience of experience, and invincible confidence acquired by some great natural geniuses among the Nantucket commanders; that from the simple observation of a whale when last descried, they will, under certain given circumstances, pretty accurately foretell both the direction in which he will continue to swim for a time, while out of sight, as well as his probable rate of progression during that period. (MD288)

(55) The traditions and customs of other people are, to a certain extent, evidence of what their experience has taught them; presumptive evidence, and as such, have a claim to his deference: but, in the first place, their experience may be too narrow; or they may not have interpreted it rightly. (I3)

(56) To a certain extent it is admitted, that our understanding should be our own: but there is not the same willingness to admit that our desires and impulses should be our own likewise; or that to possess impulses of our own, and of any strength, is anything but a peril and a snare. (I5)

(57) We have a warning example in China—a nation of much talent, and, in some respects, even wisdom, owing to the rare good fortune of having been provided at an early period with a particularly good set of customs, the work, in some measure, of men to whom even the most enlightened European must accord, under certain limitations, the title of sages and philosophers. (I10)

(58) Under certain circumstances there are few hours in life more agreeable than the hour dedicated to the ceremony known as afternoon tea. (PL1)

(59) From five o'clock to eight is on certain occasions a little eternity; but on such an occasion as this the interval could be only an eternity of pleasure. (PL1)

(60) "No," he said; "women rarely boast of their courage. Men do so with a certain frequency." (PL98)

(61) Her fortune therefore became to her mind a part of her better self; it gave her importance, gave her even, to her own imagination, a certain ideal beauty. (PL146)

(62) "A fig for my opinion! If you fall in love with Mr. Osmond what will you care for that?"
"Not much, probably. But meanwhile it has a certain importance. The more information one has about one's dangers the better." (PL163)

(63) "Do you mean that it's none of my business?"
"Beyond a certain point, yes." (PL223)

(64) He had made to a certain extent good use of his time; he had devoted it in vain to finding a flaw in Pansy Osmond's composition. (PL233)

(65) "It will be very kind. I must say, however, that I've in a few small ways a certain initiative. I should like for instance to introduce you to some of these people." (PL253)

(66) "Ah, you must remember that the circumstances are peculiar," said Ralph with an air of private amusement.
"To a certain extent—yes. But is he really in love?" (PL304)

(67) "Yes, Westlake may be old-fashioned and all that, but he's got a certain amount of intuition, while McGanum goes into everything bull-headed, and butts his way through like a damn yahoo, and tries to argue his patients into having whatever he diagnoses them as having!" (MS165)

There are many, not entirely independent clues that the examples above are hedged. In about half the cases, there are other hedges, such as modal verbs or adverbs: (54), (56)–(59), (61), (65). In a similar number of cases, certain is part of a vague parenthetical limitation, such as to a certain extent: (54)–(57), (63). Another clue is an adversative or concessive context, in which one expects hedges: (56), (62), (63), (66), (67). In other cases, it is clear that the statement containing certain is hedged because it is expanded upon in a subsequent clause and the effect of the vague limitation is made clear: (55), (62), (64), (65). Finally, in a few cases it is clear that the statement in question alludes to another kept off the record because by itself the overt statement would be so vague as to violate the maxim of relevance: (60), (62), (67).

5.2.5 restricting generalization

One difference between an ordinary indefinite noun phrase and a noun phrase with *certain* is that the latter has only the taxonomic generic use. Because of this, adding *certain* to an indefinite noun phrase which would most naturally have a generic reading can serve to prevent this reading. *Certain* thus restricts generalization; it indicates that whatever generalization would be understood were no *certain* present holds only of some unspecified cases. One may perceive this usage most clearly in the instances below if one considers what the passages would be taken to mean if *certain* were absent.

(68) And since in this famous fishery, each mate or headsman, like a Gothic Knight of old, is always accompanied by his boat-steerer or harpooneer, who in certain conjunctures provides him with a fresh lance, when the former one has been badly twisted, or elbowed in the assault; and moreover, as there generally subsists between the two, a close intimacy and friendliness; it is therefore but meet, that in this place we set down who the Pequod's harpooneers were, and to what headsman each of them belonged. (MD70)

(69) By some naturalists who have vaguely heard rumors of the mysterious creature, here spoken of, it is included among the class of cuttle-fish, to which, indeed, in certain external respects it would seem to belong, but only as the Anak of the tribe. (MD153)

(70) Plum-pudding is the term bestowed upon certain fragmentary parts of the whale's flesh, here and there adhering to the blanket of blubber, and often participating to a considerable degree in its unctuousness. (MD222)

(71) For, not to hint of this: that it is an inference from certain canonic teachings, that while some natural enjoyments here shall have no children born to them for the other world, but, on the contrary, shall be followed by the joy-childlessness of all hell's despair; whereas, some guilty mortal miseries shall still fertilely beget to themselves an eternally progressive progeny of griefs beyond the grave; not at all to hint of this, there still seems an inequality in the deeper analysis of the thing. (MD244)

(72) "A glass box would not be so brilliant, not so clearly visible, as a diamond box, because there would be less refraction and reflection. See that? From certain points of view you would see quite clearly through it." (IM56)

(73) 8. Act not to apply to certain specimens (WA1)

(74) 21. Certain exports prohibited
22. Certain imports prohibited (WA1)

(75) SECT. 1. Short title. WPREI 82:149 IDX An Act to further the protection and conservation of wildlife by regulating the export and import of certain animals, plants and goods, and for related purposes (WA5)

(76) SECT. 8. Act not to apply to certain specimens WPREI 82:149 IDX WPREI 82:149 TOP (WA14)

(77) (2) The regulations—
(a) may provide that the Minister shall not declare a management program to be an approved management program unless he is satisfied of certain matters in relation to the program; or (WA16)

(78) (4) The regulations—
(a) may provide that the Designated Authority shall not enter the name of a scientific organization in the register maintained under sub-section (1) unless he is satisfied of certain matters in relation to the organization; (WA31)

There are two things of note in these examples. First, for many of them, removing *certain* would make them infelicitous or would change the interpretation of certain

words. Consider (68), (72), (73), and (76)–(78). Removing *certain* from (76) would make it sound as though the act concerned specimens as opposed to, say, animals in general; *specimen*, rather than being a label for the category of things being considered, would come to be understood as one of the things under consideration itself. Removing *certain* from (68) would make it sound as though Melville wished to refer to conjunctures as a particular variety of situation as opposed to something or other else. I imagine that this is so because these terms are otherwise so semantically vacuous; they serve merely as a necessary appendage to *certain*. If *certain* is removed, the hearer contrives some other justification for their being there; this produces the pragmatic anomaly that we, the hearers, perceive. Setting aside this particular discomfort, however, we see that the sentences without *certain* have generic force.

The second thing to note among these examples is the prevalence of the generalization-restricting use of *certain* in the legal text. Of the 18 instances of *certain* in the *Wildlife Act of 1982*, all of them have the restriction of generalization as one of their effects.

5.2.6 allusion

What I refer to as the allusive use of *certain* is its use to allude to a proposition hidden in plain view, as it were. In alluding to it, the speaker manages to convey its meaning to the hearer as clearly as if she had asserted it outright, but she avoids committing herself to it. The allusive use of *certain* is exemplified by *a woman of a certain age*, meaning a woman who is old enough no longer to receive the social advantages of youth outright but young enough in appearance, she feigns to believe, to receive them by cosmetic improvement and courtesy. That is, a woman of a certain age is a woman whose age it would be impolite to inquire about or mention. This use of *certain* is so well known that it receives its own entry in the Oxford English Dictionary, unlike any of the others I have described or the facts I will describe below excepting the mere acquaintance use. One

would expect, therefore, that it would be common in texts. Nevertheless, in the more than 950,000 words I examined I found only the following instances.

(79) One of them, a person of a certain age, in spectacles, with a fresh complexion and a full cheek, had a more discriminating manner than her colleague, as well as the responsibility of their errand, which apparently related to the young girl. (PL148)

(80) "You don't understand me."
"No, not even when you insult me."
"I don't insult you; I'm incapable of it. I merely speak of certain facts, and if the allusion's an injury to you the fault's not mine. (PL317)

(81) His wife was dead—very true; but she had not been dead too long to put a certain accommodation of dates out of the question—from the moment, I mean, that suspicion wasn't started; which was what they had to take care of. (PL357)

In spite of the paucity of examples of allusive *certain* in the texts I have examined, I have included it in my inventory because it is so well known. It is possible that this use is becoming more common since these texts were written. Unfortunately, I found few modern texts of any length which were publicly available in electronic form. However, I happen to have found a series of excellent examples of allusive certain in a printed text which was not among the electronic texts that I surveyed:

(82) Dear Leonard,
I had to leave with my family. We're going back to "The Bronx," if you know what I mean. I'm sorry to leave like this, without giving you any warning, but I had to promise a certain person that I wouldn't tell anybody about this, not even my best friend—and that's you. The certain person—I had to promise not to mention his name, but he's a sort of high commissioner of a certain place—you've seen him.
I'll try to get a note to you sometime, but it isn't easy to get mail from "The Bronx" to this place. In the meantime, please don't forget about your old friend,

Alan Mendelsohn[5]

In the context of the story containing this passage, it is clear that Alan does not suppose for an instant that Leonard does not know who and where he alludes to or that he will be

[5] p. 237, *Alan Mendelsohn, the Boy from Mars*, in *5 Novels*, by Daniel Pinkwater, 1997, New York: Farrar Straus Giroux.

unable to deduce that this is who and where he alludes to. Alan is using the device of alluding with *a certain* to honor an obligation not to refer directly.

5.2.7 mere acquaintance

I am characterizing as the mere acquaintance use the use of *certain* to indicate that some entity is known to the speaker only tangentially. It is perhaps best treated as a subcase of the hearsay use. What distinguishes it from the latter is that the entity referred to in the mere acquaintance use would most likely be referred to with a definite noun phrase were *certain* not an option. In the prototypical case, *certain* is appended to a proper noun. This is exemplified by (83) below. The only instances of the mere acquaintance use I found in the texts I examined involved mutually knowable entities not referred to with a proper noun: (84), (85).

The mere acquaintance use of *certain* is the only other besides the allusive use which receives its own mention in the O.E.D. Again, it is almost unattested in the texts I examined but I have included it because it is often mentioned.

(83) A certain Frank Purefoy is here to see you, sir.

(84) "I come to your house and want a bed; you tell me you can only give me half a one; that the other half belongs to a certain harpooneer. And about this harpooneer, whom I have not yet seen, you persist in telling me the most mystifying and exasperating stories tending to beget in me an uncomfortable feeling towards the man whom you design for my bedfellow— a sort of connexion, landlord, which is an intimate and confidential one in the highest degree." (MD19)

(85) "I see nothing here, but a round thing made of gold, and whoever raises a certain whale, this round thing belongs to him." (MD230)

There is usually a note of disdain in mere acquaintance uses of *certain.* This is noted in the O.E.D. and is apparent in examples (83)–(85). Compare (83) to the same sentence without *a certain*. Without *a certain* one has the sense that the speaker feels she has come to count Frank Purefoy among her acquaintances. One has the sense that the speaker believes, or is putting on the pretense, that she and the hearer have common

knowledge of Frank Purefoy. With *a certain*, the speaker is indicating her lack of faith in the mutuality of knowledge of Frank Purefoy. Perhaps her hearer knows who Frank Purefoy is, but she is not willing to assume this, as she herself has only just become aware of Frank's existence. The speaker's unwillingness to treat Frank Purefoy as mutually known indicates that she does not regard him as particularly important. Compare (83) to (86).

(86) ?A certain King Helmut of Bohemia is here to see you, sir.

Kings are usually accorded the honor of being treated as mutually known, so (86) is considerably odder than (83). In (84), there is a similar note of disdain. The speaker's use of *certain* indicates that he is not entirely sure that there is any harpooneer, that the whole notion of this harpooneer is a little far-fetched and incredible. Of course, this sense is enforced by the remainder of the passage. In (85), the effect of *a certain* is to suggest that the speaker doesn't treat the whale in question with any particular awe or respect any more than he does the doubloon, the round thing made of gold. I posit that in every case the perceived negative tone arises from the denial of an otherwise presupposed mutual knowledge.

5.2.8 negative polarity and irrealis contexts

Martin Haspelmath (1997) claims to have found that specific indefinite expressions avoid negative polarity contexts and other irrealis contexts. He does not make this claim for English per se as he does not view any expression in English as indicating both specificity and indefiniteness, though he does describe *certain* as a "determiner like expression" which forces a specific reading on indefinite noun phrases. One presumes from this that his generalization should hold of *certain* as well. Some preliminary evidence supports this. I have surveyed native speakers' opinion of sentences having *certain* in various negative polarity contexts. One cannot place too much faith on this

data, since, among other problems, there is a possibility that *certain* may take scope wider than the negative polarity operator, in which case it would be syntactically but not semantically inside the negative polarity context and all bets would be off. Nevertheless, the intuition reports of the native speakers surveyed did tend to suggest that sentences with *certain* syntactically inside negative polarity contexts were not very felicitous. Also, in the texts examined, occurrences of *certain* both syntactically and semantically inside the scope of irrealis operators were extremely rare and one could argue that the few instances should be discarded as counterexamples for independent reasons. Furthermore, there are instances, such as (87) and (88) below, where the speaker uses *particular* inside of irrealis contexts and *certain* otherwise. In these examples I have added brackets to indicate the relevant negative polarity contexts.

(87) (2) The regulations—
(a) may provide that the Designated Authority shall not [declare an organization referred to in sub-section (1) to be an approved institution in relation to any class, a particular class, or particular classes, of specimens] unless he is satisfied of certain matters in relation to the organization; or (WA16)

(88) (2) The regulations—
(a) may provide that the Designated Authority shall not [declare a zoological organization to be an approved zoological organization in relation to any class, a particular class, or particular classes, of specimens] unless he is satisfied of certain matters in relation to the organization; or (WA17)

I shall assume, therefore, that Haspelmath's generalization holds for *certain*: *certain* cannot occur within the scope of irrealis operators.

5.2.9 predication

A less problematic negative generalization about *certain* is that *certain* noun phrases cannot be used as predicate nominals.[6]

[6] Recall that I reserve the name predicate nominal for the second noun phrase in a *non-reversible* copular sentence (§ 3.1.3). One can find sentences in which two noun phrases are joined by a copula and the second has the determiner *certain*. The following instance was provided by Matthew Dryer (p.c.).

(89) ?This is a certain spoon.

(90) *Mabel is a certain friend of mine.

(91) *Harry is becoming a certain meteorologist.

(92) *Felix turned into a certain jerk after he met Zipporah.

I have as yet failed to find a clear counterexample to this generalization. One might incorporate (89) into a variety of pseudo-cleft construction — *This is a certain spoon that I seek*. —, but it is not clear that this is a predicative construction since it is a pragmatically marked paraphrase of a non-predicative construction. The context accepting (89), for instance, paraphrases (93).

(93) I seek a certain spoon.

5.2.10 wide scope

Related to Haspelmath's generalization concerning specificity and irrealis contexts is a generalization put forward by Hornstein (1984) that *certain*'s semantics is distinguished by its requiring widest scope. Consider how the following examples vary in meaning depending on the determiner present.

(94) a. Everyone likes a certain flavor of ice-cream.
b. Everyone likes SOME flavor of ice-cream.
c. Everyone likes some flavor of ice-cream.

(i) The person I was talking to when you phoned is a certain student I will not identify.

The two noun phrases in this sentence are reversible, however.

(i) A certain student I will not identify is the person I was talking to when you phoned.

Sentences such as these I term equational. They are not the cases presently at issue.

d. Everyone likes a flavor of ice-cream.

(95) a. You must marry a certain person.

b. You must marry a particular person.

(96) a. Everyone must marry a certain person.

b. Everyone must marry a particular person.

(97) a. Everyone might marry a certain person.

b. ?Everyone might marry a particular person.

The wide scope reading of the object noun phrases in (94) is that there is some flavor of ice-cream such that everyone likes that flavor. The narrow scope reading is that there is a function from people to flavors of ice-cream such that for every person there is a flavor of ice-cream that that person likes. (94)c most naturally has the narrow scope reading. (94)b may have the wide scope reading, though the narrow scope reading remains possible. (94)d is simply odd, but its most natural reading is the narrow scope one. (94)a is less odd and, true to the spirit if not the letter of Hornstein's generalization, its most natural reading gives the object noun phrase wide scope.

Consider now (95). (95)a says that there is a person that you must marry. (95)b says that if you marry someone, you marry that person, Fred, say, or Sandy, not people in general; you can greet a crowd or speak to a crowd but you cannot marry a crowd (or at least you cannot be married to one). The difference between these two is expressible as a difference in scope. Again, it appears that Hornstein's generalization holds.

Consider now (96). There are three operators whose scope must be ordered: the quantifier on the subject noun phrase, the quantifier on the object noun phrase, and the modal. By Hornstein's generalization, (96)a should mean that there is a certain person that everyone must marry. This is semantically anomalous, but it should be the only available reading. To my intuition, however, the most obvious reading of (96)a, and a

perfectly acceptable reading, is that for every person there is a certain person that he or she must marry. *Certain* has taken scope outside of the modal but inside of the universal quantifier. The most natural reading of (96)b, on the other hand, is that there is no one who may or can marry a group of people. *Particular* has taken narrowest scope.

(97) is perfectly parallel in structure to (96). If the semantic character of *certain* depends only on the syntactic structure of semantic representations, one would expect (97) to have readings parallel to those of (96). (97)a should mean that for everyone there is someone he or she might marry. (97)b should mean that for everyone it is possible that he or she will marry an individual as opposed to a group. I believe this is the interpretation of (97)b, although it is a highly anomalous thing to assert. The most obvious reading of (97)a, however, is that there is someone that everyone might marry. In this case, as per Hornstein's generalization, *certain* has taken widest scope. That the scope of *certain* differs between two sentences which are syntactically perfectly parallel argues not only that Hornstein's generalization is too strong, but that the semantics of *certain* cannot be a purely a matter of the syntax of semantic representations, contra Hornstein.

Hintikka (1986) has in fact argued that Hornstein's generalization is wrong and that *certain* only indicates that there is a contextually available function to members of the extension of the nominal to which *certain* is appended.[7] For instances, he argues that the meaning of (98) is best represented as (99) (I use Hintikka's notation; 'K_I' is an epistemic operator translating *I know that*).

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[7] In addition, to account for the difference between (i) and (ii) Hintikka hypothesizes that *a certain* takes scope over epistemic operators.

(i) I know that Sam is dating a woman.

(ii) I know that Sam is dating a certain woman.

We will concern ourselves further with this aspect of Hintikka's analysis of *certain* in § 5.3.

(98) I know that every true Englishman adores a certain woman. (Hintikka's (19))

(99) $(\exists f)K_I(\forall y)$ (y is a true Englishman $\supset$ y adores $f(y)$) [*sic*] (20)

This second order formula is ambiguous as to which first order formula it corresponds to. If the most readily available function in context is that which associates every man to his mother, the corresponding first order formula gives *certain* narrow scope. If the function is the constant function which only selects the Queen, the corresponding first order formula gives *certain* wide scope. *Certain*'s apparent preference for widest scope, according to Hintikka, is due only to the relatively greater salience or availability of constant functions. I shall take Hintikka's to be the more accurate generalization.

I was able to find a few examples in the texts that I examined that illustrate a narrow scope use of *certain.*

(100) He would begin to serve your guests out of a keg that was half full, and finish with one that was half empty, and then you would be charged for two kegs of beer. He would agree to serve a <u>certain</u> quality at a <u>certain</u> price, and when the time came you and your friends would be drinking some horrible poison that could not be described. (J13)

(101) Jurgis was like a boy, a boy from the country. He was the sort of man the bosses like to get hold of, the sort they make it a grievance they cannot get hold of. When he was told to go to a <u>certain</u> place, he would go there on the run. (J16)

(102) It was then again strung up by machinery, and sent upon another trolley ride; this time passing between two lines of men, who sat upon a raised platform, each doing a <u>certain</u> single thing to the carcass as it came to him. (J25)

(103) The packers, of course, had spies in all the unions, and in addition they made a practice of buying up a <u>certain</u> number of the union officials, as many as they thought they needed. (J64)

In (100), what is referred to is not a certain quality and price which the man in question would always agree to, but whatever quality and price he agreed to on a particular occasion: there is a function from agreements to qualities and prices. In (101), the narrator is not speaking of a certain place that Jurgis would always run to, but whichever place he was told to run to on a particular occasion: there is a function from instances of

telling to places. In (102), it is not the case that every man does the same thing to the carcass as it comes to him, but each has an appointed task which he performs on every carcass: there is a function from men to tasks. And in (103), there is no particular number of union officials which the packers always buy up, but, as is clearly stated, they always buy up as many as they think they need: there is a function from decisions regarding need to numbers. It is notable that three of the four examples, all but (102), involve a function from holders of particular propositional attitudes to some aspect of the proposition they are committed to.

5.2.11 particular

Certain is commonly lumped together with words such as *particular*, *specific*, *definite*, *determinate*, *fixed*, *appointed*, and so on as an adjective of specificity. I have already looked at a number of ways in which *certain* differs from these other adjectives, but I have concerned myself only with demonstrating that *certain* is more like a determiner. It may be illuminating to compare *certain* to the other adjectives of specificity in usage. Since there are so many of these, I will concentrate on only one, *particular*. *Particular* is the most common adjective of specificity by far, setting aside *certain* and the uses of *fixed* not concerned with specificity.

First, let us consider the basis on which both *certain* and *particular* may be labeled adjectives of specificity. (104) has two readings, which may be paraphrased as (105)a and (105)b.

(104) Lois wants to marry a banker.

(105) a. There is a particular profession which will qualify someone as marriageable in Lois's eyes: he must be a banker.

b. There is a banker Lois wants to marry.

The second of these two interpretations involves what is called specific reference: there is a specific banker Lois wants to marry. If we add either *certain* or *particular* to *a banker*, only the specific reading is available. In this sense, both are adjectives of specificity.

Are *certain* and *particular* synonymous? If so, wherever both are usable they should have the same range of interpretations. Consider the loss-for-words use of *certain*.

(106) a. Oh! I love it! This pâté has a <u>certain</u> lovely je ne sais quoi — a nuttiness!

b. Oh! I love it! This pâté has a <u>particular</u> lovely je ne sais quoi — a nuttiness!

The speaker of (106)a has a particular notion she wishes to express but she cannot find the words to express it. The speaker of (106)b seems to conceive of a category of je-ne-sais-quois, a particular one of which she has in mind. Lest it be said that the peculiarity of (106)b arises only from the idiomaticity of *a certain je ne sais quoi*, let us examine two of the examples of the loss-for-words use of *certain* in which *certain* has been replaced by *particular*.

(107) Nor can it be questioned from what stands on legendary record of this noble horse, that it was his spiritual whiteness chiefly, which so clothed him with divineness; and that this divineness had that in it which, though commanding worship, at the same time enforced a <u>particular</u> nameless terror. (19)

(108) When he halted before the binnacle, with his glance fastened on the pointed needle in the compass, that glance shot like a javelin with the pointed intensity of his purpose; and when resuming his walk he again paused before the mainmast, then, as the same riveted glance fastened upon the riveted gold coin there, he still wore the same aspect of nailed firmness, only dashed with a <u>particular</u> wild longing, if not hopefulness. (22)

In both cases it no longer comes across that the speaker is at a loss for words, but rather it seems that he wishes to emphasize the extraordinariness of the nameless terror and the wild longing: they were distinguished as nameless terrors and wild longings go; they weren't the ordinary sort.

Certain may serve to indicate that the speaker has information which she is withholding from the speaker. Now let us replace *certain* with particular.

(109) a. A certain party told me what you did last night.

b. A particular party told me what you did last night.

Again, *particular* makes it sound as though the party in question is saliently distinguished among parties; *certain* carries no such implication. We will find that this pattern repeats itself in other uses when we replace *certain* with *particular*.

The hearsay use survives the replacement in some instances, (110), but not others, (111).

(110) I was already aware that in the whaling business they paid no wages; but all hands, including the captain, received particular shares of the profits called lays, and that these lays were proportioned to the degree of importance pertaining to the respective duties of the ship's company. (46)

(111) And this reminds me that particular Englishmen, who long ago were accidentally left in Greenland by a whaling vessel— that these men actually lived for several months on the mouldy scraps of whales which had been left ashore after trying out the blubber. (49)

Whether or not the passage remains intelligible after the replacement, the speaker seems to be talking about entities that are saliently distinguished in some way from other entities of the same sort.

The understating/hedging use does not survive the replacement at all, because the very point of hedging is to downplay the ways in which the entity is distinguished.

(112) Under particular circumstances there are few hours in life more agreeable than the hour dedicated to the ceremony known as afternoon tea. (58)

(113) From five o'clock to eight is on particular occasions a little eternity; but on such an occasion as this the interval could be only an eternity of pleasure. (59)

(114) "No," he said; "women rarely boast of their courage. Men do so with a particular frequency." (60)

(115) Her fortune therefore became to her mind a part of her better self; it gave her importance, gave her even, to her own imagination, a particular ideal beauty. (61)

(114), for instance, is transformed from an ironic understatement concerning men's boasting to an emphatic assertion.

Particular serves as well as *certain* to restrict generalization, and for the same reason: the speaker restricts her assertion to only an unspecified subset of the entities spoken of.

(116) a. A cat is a mammal.

b. A certain cat is a mammal.

c. A particular cat is a mammal.

(116)b is equivalent to (116)c, but neither makes the generic assertion of (116)a. (117) is an excerpt from *Moby Dick* illustrating the anti-generic nature of *particular*.

(117) Hence, in the English, this thing of whaling good cheer is not normal and natural, but incidental and particular; and, therefore, must have some special origin, which is here pointed out, and will be still further elucidated. (MD239)

Nevertheless, unlike *certain* (except in one variety of example to be discussed further below), *particular* may on occasion refer to a generic entity of some sort. Consider the following excerpts.

(118) Here be it said, that this pertinacious pursuit of one particular whale, continued through day into night, and through night into day, is a thing by no means unprecedented in the South sea fishery. (MD288)

(119) The increase of commerce and manufactures promotes it, by diffusing more widely the advantages of easy circumstances, and opening all objects of ambition, even the highest, to general competition, whereby the desire of rising becomes no longer the character of a particular class, but of all classes. (I18)

(120) "You talk about one's soaring and sailing, but if one marries at all one touches the earth. One has human feelings and needs, one has a heart in one's bosom, and one must marry a particular individual." (PL228)

(121) "You see an opaque red box, for instance, because the colour absorbs some of the light and reflects the rest, all the red part of the light, to you. If it did not absorb any particular part of the light, but reflected it all, then it would be a shining white box." (IM56)

(122) 14. For the purposes of this Act, a live animal of a particular kind shall be taken to have been bred in captivity if, and only if, it was bred in circumstances declared by the regulations to be circumstances the breeding in which of— (WA17)

(123) NO OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, ARE MADE TO YOU AS TO THE ETEXT OR ANY MEDIUM IT MAY BE ON, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. (J3)

I think from these examples the nature of generic *particular* is clear enough. When one uses *particular* in most cases, one sets a subset of instances apart; these and only these are the instances of the kind in question to which one means to refer. Since one is not speaking of all instances of the kind but only a subset, one's assertion is not generic. When one uses *particular* generically, one is abstracting away from any specific motives or method for choosing particular instances: it is true whatever the method, so it is true generically.

Particular cannot serve in the allusive use, just as it couldn't in understating.

(124) One of them, a person of a particular age, … (67)

(125) I merely speak of particular facts, and if the allusion's an injury to you the fault's not mine. (68)

(126) His wife was dead—very true; but she had not been dead too long to put a particular accommodation of dates out of the question—… (69)

Particular emphasizes where *certain* understates, thus turning (124) from a delicate euphemism to a simple insult.

There is no mere acquaintance use of *particular*.

(127) A particular Frank Purefoy is here to see you, sir. (83)

Whereas (83) suggests that there might be no actual person named Frank Purefoy, (127) suggests that there might be several.

Particular differs from *certain* also in that it does not eschew negative polarity contexts. Examples (87) and (88) illustrate this, as does (128). That *particular* in (128) takes scope within the negative polarity context is made unambiguous by the negative polarity determiner *any* which precedes it.

(87) (2) The regulations—

(a) may provide that the Designated Authority shall not [declare an organization referred to in sub-section (1) to be an approved institution in relation to any class, a particular class, or particular classes, of specimens] unless he is satisfied of certain matters in relation to the organization; or (WA16)

(88) (2) The regulations—
(a) may provide that the Designated Authority shall not [declare a zoological organization to be an approved zoological organization in relation to any class, a particular class, or particular classes, of specimens] unless he is satisfied of certain matters in relation to the organization; or (WA17)

(128) You see an opaque red box, for instance, because the colour absorbs some of the light and reflects the rest, all the red part of the light, to you. If it did not absorb any particular part of the light, but reflected it all, then it would be a shining white box. (IM56)

Particular can be used predicatively in one sense, unlike *certain*, but there are strict limitations on the predicative use of *particular* noun phrases.

(129) ?This is a particular spoon. (89)

(130) Mabel is a particular friend of mine. (90)

(131) *Harry is becoming a particular meteorologist. (91)

(132) ?Felix turned into a particular jerk after he met Zipporah. (92)

(130) is acceptable, if a little quaint. The excerpts in (133) and (134) provide similar uses.

(133) "I assure you there's no want of respect in it, to either of you. You know I'm a particular admirer of Mrs. Touchett." (PL170)

(134) "The bearer, Jurgis Rudkus, is a particular friend of mine, and I would like you to find him a good place, for important reasons. He was once indiscreet, but you will perhaps be so good as to overlook that." (J166)

One would expect (132) to follow the same pattern as (130), (133), and (134), it being highly congruent with them in form and semantics. It remains quite awkward, however. *A particular enemy of mine* is not much better. (129) is completely acceptable if it is understood as an equational rather than a predicative construction. Imagine continuing the clause in (129) with *that I am speaking of*. It has no meaning parallel to the *friend of mine* sentences. (131) cannot be repaired in any way. It appears, therefore, that the

predicative use of *particular* is highly restricted, though not quite so strictly as that of *certain*. There is an idiomatic use, represented by (130), (133), and (134), and a not altogether anomalous use, represented by (129).

The final fact I noted about *certain* was its preference for wide scope. That *particular* may have narrower scope than other operators is illustrated by its occurrence in negative polarity contexts: something that demands widest scope could never be in the scope of negative polarity operators. Examples (95) and (96), repeated here, demonstrate that *particular* may have narrow scope with respect to other operators as well.

(95) a. You must marry a certain person.
b. You must marry a particular person.

(96) a. Everyone must marry a certain person.
b. Everyone must marry a particular person.

(95)b can surely mean that you must marry a concrete individual if you marry at all, whereas (95)a means only, or most prominently, that there is a person that you must marry. This interpretation may be available for (95)b as well, but the narrow scope interpretation is the most salient outside of any further context. A similar variation is evident in (96). Thus, it seems *particular* not only accepts a narrow scope interpretation, in ordinary contexts it prefers a narrow scope interpretation.

5.2.11.1 the meaning of particular

If everything I have described is correct, what does this tell us about the meaning of *particular*? And given this, what have we learned about the meaning of *certain*? I think all of the facts adduced lead to one conclusion. *A particular P Qs* entails the existence of some property *R* such that the particular *P*s that *Q R*.

(135) o[(*a particular x*: *P*)($x = c \wedge x\ Q$) $\rightarrow$ ($\exists R$)($c\ R$)]

In this meaning postulate, *c* is a constant. I introduce *c* and the equational clause '$x = c$' to establish that the distinguishing property *R* must hold of the particular *x* said to *P* and *Q*. The problem with this meaning postulate is that it is vacuous — a very large problem indeed. Unless it is further entailed that *R* cannot equal *P* or *Q*, the existence of *R* is entailed by the existence of either *P* or *Q*. Nonetheless, I think this meaning is correct, because one may derive from it further meaning via Gricean implicature. In particular, (135) implies the existence of a larger set of entities of type *P* that do not *Q*, and further, it implies some distinguishing property *R* possessed by the *P* that *Q*s. If we take '$\Rightarrow$' to denote implicature, we may represent the meaning of *particular* as enriched by implicatures as in (136).[8]

(136) (*a particular x*: *P*)($x = c \wedge x\ Q$) $\Rightarrow \neg(\forall x$: *P*)($x\ Q$) $\wedge$ ($\exists R$)($R \neq P \wedge R \neq Q \wedge c\ R$)

That the first clause in (136) is related to the first conjunct of the second by implicature rather than entailment proper or presupposition is demonstrated by sentences patterned on (137), an instance of which is (138).

(137) If all *P*s *Q*, then any particular *P Q*s.

(138) If all mice eat cheese, then any particular mouse eats cheese.

In (137), the first conjunct of the implicature is contradicted. The second conjunct of the implicature is a bit slipperier. Consider (139), an instance of which is (140).

(139) If a particular *P Q*s, it may be distinguished from other *P*s only in that it *Q*s.

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[8] This definition includes only the information added to the indefinite noun phrase by *particular*. It does not include that contributed by the indefinite article

(140) If a particular mouse eats fleece, it may be distinguished from other mice only in that it eats fleece.

This would seem to be a valid and felicitous sentence. Might being distinguished from other *P*s only in that it *Q*s also be a property, though? If it is a property which may be predicated of a particular *P*, (139) contains a paradox. Setting aside this paradox, I think sentences on the pattern of (139) are instances in which the second conjunct of the implicature is contradicted.

The next question is how one can derive the implicatures of (136) from the meaning in (135). Because given the meaning in (135) *particular* is vacuous, one may conclude by the Gricean maxims of quantity and relevance that the speaker means to communicate more meaning than is communicated by (135) alone. If R equals P or Q, *particular* contributes no relevant information, so one may infer that R does not equal P or Q (and a fortiori, P and Q are not subsets of R). If P is a subset of Q, this entails that any subset of P Qs, so the more informative statement is that all Ps Q. By quantity implicature, saying that a subset of P Qs, namely the subset $P \cap R$, implies that not all Ps Q.

The gist of my definition of *particular* may remain unclear when set in these formal terms. To put it in plain language with an example, if I say that I dislike a particular movie, I imply that there are movies which I do not dislike, and I further imply that there is some property which distinguishes this movie; in this case, one infers that this distinguishing property is whatever it is which allows me to recognize this movie, to individuate it from the mass of movies. If I say that every raindrop falls on a particular patch of ground, I say that for every raindrop there is a patch of ground on which it falls, I imply that there are other patches of ground on which the raindrop does not fall, and I further imply that the patch of ground fallen on by a particular raindrop bears some property which distinguishes it from the other patches of ground; one infers that this

property is only the one, whichever it might be, that allows one to individuate this patch of ground among all those on which raindrops might fall. The function of the distinguishing property is brought more to the fore in examples such as (124). If I speak of a woman of a particular age, it sounds as though I'm speaking of a woman who is particularly agèd, meaning especially or greatly agèd. This is because *a particular age* invites the hearer to infer some property which an age might have which would distinguish it. Given that *woman* and *age* itself suggest agèdness, or at least the absence of pubescent youth, a natural salient property is greatness. This pattern holds in general: *particular* implies that the referent possesses some salient property *R*.

For most of the properties I have examined, I have shown that they distinguish *certain* but not *particular*. *Certain* invites the allusive, loss-for-words, withholding, hedging, and mere-acquaintance interpretations; *particular* does not. However great the sensitivity of *certain* to negative polarity contexts, *particular* has no sensitivity whatsoever. I have just explained why *particular* would be emphatic rather than understating: the implied property tends to be the abundance of some characteristic. I have also already explained why *particular* should serve like *certain* to restrict generalization: it restricts predication to some subset of instances of a kind. I believe the ill-suitedness of *particular* noun phrases for predication also derives from the implied property.

Indefinite predicate nominals I have argued involve a selection among "roles" in a "context situation". I shall review the terminology. Consider examples (24)b and (24)g from chapter 3.

(24) b. Alex is Chairman of the Party.

g. Alex is a cat.

These sentences may be seen as describing situations, which I called "sentence situations". Sentence situations consist of the individuals mentioned in the sentence, the

relation among them, and the roles they serve in this relation. In my notation, an adaptation of the notation of Barwise & Perry (1983) and Seligman & Moss (1997), the sentence situations of (24) are represented as in (141).

(141) b. ⟨Party Chairman, ⟨Alex⟩, ⟨Chairman⟩⟩

g. ⟨cat, ⟨Alex⟩, ⟨cat⟩⟩

These sentence situations are subsumed in larger context situations. In the case of (24)b and (24)g, these are the situations consisting of the Party and all its officials and the situation consisting of all the situations in which Alex exhibits the properties of a cat. In my notation, these are described as in (142).

(142) b. ⟨Party, ⟨…, Alex, …⟩, ⟨…, Chairman, …⟩⟩

g. ⟨$\dot{r}$, ⟨…, Alex, …⟩, ⟨…, cat, …⟩⟩

I was able to account for the properties of predicate nominals with the hypothesis that they refer to roles in context situations. If there is a unique role of a certain type in the relevant context situation, a predicate nominal referring to it would be definite. If there is a non-unique role, a predicate nominal referring to it would be indefinite.

Within this account of predicate nominals, roles serve only to identify which individual plays which part in a relation. Nothing can be predicated of roles. Roles have no properties. Therefore, there is no way in which one can pick out a particular role of a certain type. One expects *particular* to modify references to ostensible individuals and these are not the right semantic type to be the denotation of a predicate nominal. *John is a particular banker* sounds bad for the same reason that *John is thát banker* sounds bad.

So, *particular* and *certain* do not have identical semantics. This leaves open the question as to which, if either, is characterizable as an adjective of specificity. This is a

terminological question which need not concern us. We know, however, that Fodor & Sag (1982) are incorrect in equating the two expressions. The semantics they tentatively assign to both is nothing less than that which I have just assigned to *particular*. The data above create some problems for Enç (1991) as well, though in the opposite direction. Her analysis of *certain* bears a considerable resemblance to mine, though she treats the adjectives of specificity in general as having the same "core semantics", meaning, I presume, that any apparent differences in usage are attributable entirely to syntactic peculiarities, frequency effects, and incidental associations between certain adjectives and certain semantic or lexical contexts.

Now that I have established what *certain* does and what it is not, I will turn to what it is.

5.3 THE MEANING OF *CERTAIN*: VARIOUS APPROACHES

Now that we know what facts must be explained by a definition of *certain*, let us get down to the work of defining it. I will begin by reviewing a number of attempts to define *certain* and then reviewing a number of attempts to define the related notion of specificity. This review should drive home one point: *certain* and specificity involve the assignment, either by the speaker or by some other holder of propositional attitudes, of a referent to the noun phrase in question. This, in essence, is my analysis as well, though I phrase mine in the terminology of my rational implicature analysis, which I use to handle certain nuances of usage which the other analyses miss. I will present my analysis after my review of the others.

I begin the review with an authoritative non-linguistic, non-philosophical analysis: the definition provided by the Oxford English Dictionary.

> **Certain** …
> **II**. **7**. **a**. Used to define things which the mind definitely individualizes or particularizes from the general mass, but which may be left without further

> identification in description; thus often used to indicate that the speaker does not choose further to identify or specify them; in *sing*. = a particular, in *pl*. = some particular, some definite.

This is the essence of many of the definitions to come. "The mind", some mind, "definitely particularizes" the referent of a *certain* noun phrase. One gathers that this mind is or may be the speaker's, as this definition goes on to say that *certain* is "often used to indicate that the speaker does not choose further to identify or specify" the referent. The reader most likely will have already predicted my chief complaint with this definition: the closing clause, "in *sing*. = a particular, in *pl*. = some particular, some definite." I have gone to some lengths in demonstrating that *a certain* is not synonymous with *a particular*. One cannot conclude from this slip on the part of the OED lexicographer that the definition of *certain* is incorrect, however. It might be that it is the definition of *particular* which is flawed. Indeed, I must admit that this is an excellent and succinct non-technical definition of *certain.*

Hintikka (1986) provides one philosopher's analysis of *certain* (he is responding to a syntactic treatment given by Hornstein (1984a,b, 1988)). According to Hintikka, *certain* should be interpreted by a function from objects in the sentence to objects of the type denoted by the nominal to which it is appended; furthermore, the existential operator binding the function variable has scope over epistemic operators. An epistemic operator necessarily has as one of its arguments the holder of the beliefs in question. Let us call this the e-agent, for epistemic-agent (see § 4.3). As I discussed in § 4.3, the effect of putting a variable-binding operator outside the scope of an epistemic operator and the variable bound inside its scope is to indicate that the e-agent of the epistemic operator has a de re belief regarding the value of the variable. Thus, Hintikka is saying that if a *certain* noun phrase occurs in a sentence with an epistemic operator, there is some function known to the e-agent which selects a referent for the noun phrase. This is not terribly different from the OED definition just cited. Some of Hintikka's examples illustrating his analysis are,

(98) I know that every true Englishman adores a certain woman. (19)

(99) $(\exists f)K_I(\forall y)$ (y is a true Englishman $\supset$ y adores $f(y)$) (20)

The formula in (99) varies in interpretation depending on whether f has a constant value, the Queen, say, or a value which varies according to y, say, the mother of y. In either case, though, 'I' knows the function. Hintikka does not establish rigorous rules on this point, but he suggests that *certain* may signal the presence of a covert epistemic operator, so the difference between (143) and (144), for example, is that (144) is covertly equivalent to (145).

(143) A picture is missing from the gallery.

(144) A certain picture is missing from the gallery.

(145) I know that a certain picture is missing from the gallery.

I have already examined analyses such as this and found them inadequate for a number of reasons; see § 4.2. One of these reasons is brought up by Enç (1991), who uses the following example to illustrate that *certain* may take narrow scope with respect to an epistemic operator.

(146) John believes that there are unicorns living in his backyard. He claims that he can distinguish each unicorn from the others, and has even given them names. He believes that a certain unicorn is responsible for destroying his roses, and wants to catch him. (7)

The difficulty is that we wish to say that John knows a function which he believes picks out a unicorn responsible for destroying his roses without committing ourselves to the existence of any unicorn — we wish to separate existence from identity. Using only scoping with respect to an epistemic operator we cannot make this distinction. Either John knows the function and the unicorn exists, or John doesn't know the function and the unicorn might not exist. The only way out of this difficulty is to introduce covert

epistemic operators whether or not there are operators present with respect to which *certain* may take scope.

In spite of this criticism, however, Enç embraces the central insight of Hintikka's approach. She considers examples such as the following.

(147) a. John wants to own a certain piano which used to belong to a famous pianist.

b. Ned must speak to a particular congressman who has sworn to vote against this bill. (4)

(148) For every committee, the dean must appoint a certain student to represent the students' point of view. (6)

(149) Every man wanted to dance to a certain song that he loved as a teenager. (64)

(150) The teacher gave each child a certain task to work on during the afternoon. (59)

(151) Each reporter was assigned to a certain politician by the editor of the paper. (65)

Enç claims with regard to examples (147) and (149) that the relative clauses are necessary to make *certain* fully felicitous. From this and the other examples she concludes that *certain* "NPs are licensed through (a) intentional assignments [of referents to NPs] by individuals for a purpose not necessarily made explicit in the sentence or (b) by relations explicitly expressed in the sentence that provide the relevant assignment." She also notes that "[l]anguages apparently vary with respect to the licensing mechanisms allowed. The Turkish *belli*, for instance, is always licensed by intentional assignment, not by a relation expressed in the sentence. It also seems that when a sentence has a propositional attitude verb such as *believe* or *want*, the bearer of the attitude is the assigner." I include her exact words because again they reinforce the central theme of this review: *certain* and specificity involve the assignment, either by the speaker or by some other holder of propositional attitudes, of a referent to the noun phrase in question.

Enç does not regard clauses (a) and (b) to be of equal importance in licensing *certain*. She considers the following two examples.

(152) **A**: American men admire their mothers. No true Englishman admires any woman.

B: You're wrong. Every true Englishman admires a certain woman. (62)

(153) Each child sat under a certain tree. (66)

The relationship of motherhood is certainly contextually available in (152), yet this cannot be the licensing relationship for *certain*. With regard to (153) Enç observes that neither a relation nor an intentional agent is overtly present, but she claims that the

sentence evokes[9] a context in which there is some agent, mentioned earlier in the discourse, who assigned a tree to each child. From this Enç concludes that the intentional agent is the dominant licenser of *certain*; *certain* is licensed when an agent is recoverable from discourse, but *certain* need not be licensed by a relation even when one is overtly present.

The evidence Enç adduces only weakly supports her position. For one thing, some of the stereotypical uses of *certain* involve no elaborating relative clause, regardless of the presence of an epistemic operator. There are, for example, the allusive and mere-acquaintance uses: *a woman of a certain age* and *a certain Sir So-and-So.* For another, some of her own examples involve neither relation nor intentional agent. Furthermore, the two examples (152) and (153) are a slim basis on which to make any overarching claims about the relative importance of the two licensers. There is a clear pragmatic explanation for the failure of motherhood to license *certain* in (152)**B**. **A** has said that American men admire their mothers but no true Englishmen admire any women. Because motherhood is the only property which **A** has mentioned which qualifies any women for admiration by any men, **A** has most explicitly denied the possibility of this property's qualifying women for admiration by Englishmen. If **B** wishes to deny this particular claim, therefore, it is insufficient merely to allude to some property which qualifies some women for admiration by Englishmen, leaving it to **A** to infer that this property is motherhood. If **B** wishes to deny **A**'s stronger claim, it is insufficient to make an utterance interpretable as an objection to **A**'s weaker claim.

Nevertheless, I think Enç is aiming pretty closely at the truth. Though she frames her analysis as in opposition to Hintikka's, it really differs very little at all. She merely makes the claim regarding epistemic operators stronger — there is always one present, be the e-agent the speaker or some other intentional agent mentioned or alluded to in the

[9] To evoke a proposition, context, or individual is to cause the hearer to formulate this proposition or imagine this context or individual.

discourse —; and she removes the description in terms of relative scoping. When *certain* is licensed by a relation, either overt or covert, the e-agent is the speaker. Otherwise, the e-agent is some intentional agent mentioned by the speaker.[10]

The three analyses I have mentioned all lead one towards the same conclusion: *certain* indicates the possession of a function by an epistemic agent, a function which picks out the referent of the noun phrase. Let us consider now the broader field of analyses of specificity. The same theme recurs here as well. Hellan (1981) and Ioup (1977) are of the school which argues that specificity means the speaker has a particular individual in mind; see the definition from the OED above. Fodor (1970) and Fodor & Sag (1982) take *specificity* to refer to wide scope existentiality, but this is merely a terminological decision. They argue for a separate phenomenon to explain a large class of cases that others consider to be instances of specificity. These they argue are referential uses of indefinite noun phrases parallel to the referential use of definite noun phrases first discussed by Donnellan (1966). A referential use of any noun phrase entails that the speaker has a particular referent in mind. Partee (1972) also is in favor of collapsing specificity with referentiality à la Donnellan. Saarinen (1981) is in favor of collapsing specificity with the de re use of referring expressions in opaque contexts, which is very nearly the same thing. Enç (1991) has a broader notion of specificity than that embraced by any of these other authors. She encompasses under this term two varieties of discourse linked expressions, those which most linguists call specific and a special class of partitives. For the first half of her definition, though, she provides essentially the same account as these other authors.

My analysis of *certain* is a refinement of Enç's analysis two paragraphs above: *certain* indicates that the speaker believes she would be satisfied by a choice function

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[10] One could argue that in this case the speaker still knows a function to the referent of the *certain* noun phrase. She knows the e-agent who knows the function, so by composition, she herself knows a function. Nevertheless, I will demonstrate later in this section that there are cases in which *certain* is licensed by an e-agent neither known to nor selected by a function known to the speaker.

determined by the preferences of an e-agent, who is by default the speaker herself; this function picks out the referent of the nominal to which *certain* is appended. My contribution to this line of scholarship is that I establish the adequacy of this analysis in greater detail. One advantage of my analysis is that it can be integrated into the rational implicature analysis of the (in)definite determiners. This allows me to explain why *certain* is associated with the indefinite article and why, like the definite article, it presupposes the existence of its referent. Another advantage is that it is extendible to an analysis of *any* without further stipulation.

5.3.1 the meaning of *certain*: an indexed choice function account

To begin with, let us see how far we can go by giving *certain* the same semantics as I suggested for specificity at the end of § 4.3.

(154) $[\![\textit{certain}\ \mathrm{N'}]\!] = f_{\mathbf{S}}([\![\mathrm{N'}]\!])$

This formula says that *certain* is interpreted via a choice function selecting some member of the extension of N'. This choice function is restricted by the subscript **S**, not +**S**. The subscript **S** indicates that the choice function is dependent on the speaker; specifically, the choice function is some function known to the speaker. As was the case in § 4.3, I am using this indexed choice function notation only to explore the semantics of *certain*. In § 5.3.2 I will argue that *certain* indicates that the speaker would be satisfied with a choice function determined by the preferences of the speaker. That is, I will argue that the choice function should be restricted by the subscript +**S**, not **S**. It will be easier to make that argument in the context of the argument below, however.

The analysis of *certain* represented in (154) would be sufficient to account for Hintikka's example (19), repeated here.

(98) I know that every true Englishman adores a certain woman. (19)

Accepting Hintikka's analysis, this means that there is a function associating women to true Englishmen such that for every true Englishman I know that this Englishman adores the associated woman. If this is true, then one may give a case-by-case definition of a function f such that I know f and

(99) $(\exists f)K_I(\forall y)$ (y is a true Englishman $\supset$ y adores $f(y)$) (20)

Or, in my notation,

(155) (i know)[($\forall y$: true Englishman)(y adore f_s(woman))]

One question that one might ask about this definition for *certain* is whether it may be used in a de dicto sense. This would mean that the speaker signified by **S** wouldn't be the speaker of the utterance but another epistemic agent referred to in the utterance. Were this possible, (156) would have paraphrase (157).

(156) No one said they thought a certain man stole the bike.

(157) "I think a certain man stole the bike" is not something that anyone said.

This reading is unusual but I believe that it is possible.[11] We must understand **S**, therefore, as variable rather than constant within a particular sentence. It is a variable that is bound to an e-agent, one that is implicit or mentioned in some clause containing *certain*.

To repeat, this is what I am proposing: **S** can refer to any e-agent, whichever one is relevant to the epistemic act in question, and only refers to the speaker in most cases because in most cases the act in question is the speaker's sentence. If this is so, what has

[11] This reading places *certain* within the scope of a negative polarity operator, but only because it is a de dicto reading. It is still the case that within a proposition bound to a particular epistemic operator *certain* cannot occur within the scope of a negative polarity or irrealis operator.

become of the symmetry among the non-quantificational determiners? The **H** in the account of the (in)definite determiners was the hearer of the sentence. **S**, so it appears, does not necessarily refer to the speaker of the sentence. Is the symmetry gone, and with it much of the elegance of the rational implicature account, or can the (in)definite determiners also be used in a de dicto sense? The latter is the case, as examples (158) and (159) show.

(158) Harry said we should go through <u>the door</u> at the top of the stairs, but there are three doors here. I have no idea which door he meant.

(159) When Harry said he needed to speak to <u>a man with a weakness for martinis</u>, he must have meant the guy over there at the bar.

In (158), the speaker herself does not know which is the relevant door, so she certainly cannot believe she would be satisfied by a choice function determined by the preferences of the hearer, when he is only trying to choose her choice. In (158), the relevant hearer is in fact the speaker and the relevant speaker is no the speaker of (158), but Harry. In (159), the speaker believes that the hearer can identify the man with a penchant for martinis, as the second clause demonstrates. The NP *a man with a penchant for martinis* is indefinite because the relevant speaker again is Harry and the relevant hearer is not the hearer of (159), but whoever Harry was speaking to. Both **S** and **H** must be relativized to an epistemic act. Examples of de dicto (in)definite determiners such as in (158) and (159) have not drawn much comment in discussions of (in)definiteness. It has been observed, however, that *certain* is interpreted relative to an epistemic agent other than the hearer, so I have introduced the possibility of de dicto readings only in this discussion of the specific determiner.

5.3.1.1 explaining the empirical facts

The derivation of most of the uses of *certain* I extracted from texts is straightforward. *Certain* indicates that some epistemic agent, by default the speaker, has information regarding a particular referent and it implies that the speaker wishes the hearer to know that the e-agent in question has this information. Suppose the e-agent is the speaker. That the speaker has information regarding this particular referent could be imparted by the speaker's simply including this information in the propositional content of her utterance. However, the speaker has only indicated that she has the information, not what the information is; by the Gricean maxim of relevance the hearer may infer from this that the mere existence of this fact should be of interest. The various different uses of *certain* thus arise from particular hypotheses as to *why* the mere existence of a particular fact would be of interest to the hearer.

Among the reasons that knowledge of a particular fact entertained as true by the speaker might be of interest to the hearer is that the fact itself might be of interest. If this is in fact the case, one can infer by the Gricean maxim of quantity that the speaker has some motivation for not delivering the fact itself. It might be that she is unable to do so; this is the loss-for-words use. It might be that she simply does not wish to go on the public record; this is a motivation for withholding knowledge. It might be that indicating the existence of the fact is sufficient for the speaker to make her rhetorical point — either it is a threat/promise that more precise, convincing information is in reserve or the knowledge of the existence of the fact is sufficient to allow the hearer to infer the information withheld; this is another motivation for withholding knowledge. Allusion, understatement, and hedging are just varieties of withholding knowledge. Consider the allusive use of *certain*, illustrated by examples such as *a woman of a certain age*. Knowledge withheld is kept off the public record; on the public record, however, is that there is knowledge to withhold, and from the fact that it is withheld one may deduce that

it is not the sort which one would want public; it is not flattering or favorable information. Consider the understating/hedging use. One cannot verify or falsify the speaker's assertion without knowing just which entities she means to refer to, and as for the referent of the *certain* noun phrase, she keeps this information to herself. Since the speaker has not communicated the precise proposition she holds true, it is more difficult to show that her assertion is false.

On the other hand, suppose the epistemic agent is not the speaker. One way to indicate that knowledge is hearsay is to indicate that someone else has more specific information. This is precisely what *certain* indicates if the e-agent is understood to be someone other than the speaker. Furthermore, that the speaker chooses to indicate that someone has certain knowledge is evidence that it is not common knowledge. *Certain* indicates that the speaker has grounds for regarding the referent as legitimate while implicating that one might question its legitimacy. The mere-acquaintance use of *certain* often is nothing more than an instance of the hearsay use. The speaker is indicating that she has reason to believe there is a particular referent for the *certain* noun phrase, but the very fact that she feels it necessary to indicate this implies that this is not presupposed. The referent of the noun phrase is not common knowledge. Moreover, the grounds for believing in the existence of the referent of the noun phrase may be slim: the speaker's only grounds for believing that there is a certain Mr. So-and-So is that the individual referred to identified himself this way; it is mere hearsay.

Certain serves to restrict generalization because it restricts the choice function over the extension of the nominal. Because the choice function is restricted to an unspecified subset of all possible choice functions, there is no guarantee that an arbitrary individual in the extension of the nominal can be chosen. *Particular* restricts the choice function as well, but not in as clearly specified a way — the particular referent must be somehow distinguished (see § 5.2.11.1). With *particular* one may generalize over

restrictions, therefore, and create a generic assertion, as is illustrated in (122), repeated here.

(122) 14. For the purposes of this Act, a live animal of a particular kind shall be taken to have been bred in captivity if, and only if, it was bred in circumstances declared by the regulations to be circumstances the breeding in which of— (WA17)

In this context, a particular kind could be any kind; the kind is indeterminate, so *a particular kind* is generic. One may do something similar with *certain*, abstracting away from particular e-agents. For example, consider the fabricated example below.

(160) In any culture there is some notion of etiquette. There are certain things one does and certain things one does not do on pain of disgrace.

In (160) the generalization is over cultures. The certain things one does or does not do are determined by the beliefs held by members of an indeterminate culture — an indeterminate culture is in effect the e-agent. These certain things, too, are thus indeterminate, though they do not vary independently of the first two indeterminates. What is crucial is that the speaker of (160) is not speaking of specific rules of etiquette; she has no specific rules in mind. This variety of generalization is more specialized than that with *particular* — it necessarily involves generalization over e-agents. Compare (160) to (161)–(163).

(161) ?In any ecosystem there is a food chain. There are certain heterotrophs that eat certain autotrophs …

(162) ?In any building there is a distribution of load. There are certain compressive forces and certain torsional forces …

(163) ?In any book there is a rhetorical structure. There are certain chapters and certain indexes …

In these examples there is no e-agent other than the speaker of the question, who is not indeterminate. Consequently, all of (161)–(163) sound quite odd as generalizations. Generalization over e-agents is a very particular sort of generalization; there are no examples of it in the texts that I surveyed, whereas there are numerous instances of generic *particular*.

The similarity of *certain* to *particular* and the other adjectives of specificity is intimately tied to its use in restricting generalization. Both indicate an unspoken restriction on the interpretation of the nominal to which they are appended. This means noun phrases containing either cannot be interpreted as referring to an arbitrary representative of the extension of the nominal. In the absence of any clarifying context, the unspoken restriction imposed by *particular* is taken to be the same as that imposed by *certain*: it is some specific restriction known to the speaker and restricting the interpretation of the nominal to some specific individual known to the speaker. For both, this severely limits their use in predication, because, as argued in §§ 3.1 and 5.2.11.1, one speaks in this way of ordinary individuals, not roles. Roles do not have properties such that one could distinguish certain roles of a particular type from others.

Yet another fact accounted for by our choice function interpretation of *certain* is its affinity for wide scope interpretations. This choice function is restricted only by an e-agent. The function of including an operator within the scope of another operator is to indicate a dependence of the first on the second. Since the choice function of *certain* is dependent only on the e-agent, it must have wide scope with respect to other operators. This differentiates *certain* from *particular*. Since the nature of the restriction inherent in *particular* is not grammaticized, one cannot say that it is independent of any operator. Note that this explanation does not preclude *certain* in effect having narrow scope with respect to non-epistemic operators; the function known to the e-agent may be dependent on the value of other operators involved in the interpretation of the sentence.

One seeming problem with our current definition of *certain* is that there is another determiner whose noun phrases can be assigned a referent by a function known to the speaker: the definite article. The definite article introduces a restriction on the choice function over its nominal to the effect that the speaker will be satisfied by a choice function if it is determined by the preferences of the hearer. Because reference is determined in the game of reference, a game of pure coordination played by the speaker and the hearer, this means that the speaker believes there is a choice function determined by the hearer's preferences which matches a choice function determined by her preferences, as far as the noun phrase in question is concerned. Thus, the definite article implies the existence of a choice function determined by the speaker's preferences capable of selecting from the extension of the nominal a referent for the definite noun phrase (see § 2.5). This being so, it is peculiar that *certain*, which indicates precisely that the choice function over the nominal is known to the speaker, should occur in collocation with the *indefinite* (in)definite determiner.

The solution to this puzzle has two parts, one pragmatic and the other historical and arbitrary. By the reasoning discussed in the preceding paragraph, the restriction +**H** restricts the choice function to a subset of those known to **S**. *Certain* is redundant in a definite noun phrase, therefore. By the maxims of manner and relevance this redundancy is infelicitous: there is a more perspicuous phrasing of the meaning imparted by *the certain*, namely *the*; and no relevant information is contributed by the determiner *certain* in this collocation. Apparent redundancy is not always infelicitous. *The man was big! Huge!* is a felicitous though redundant piece of discourse. In general, apparent redundancy is emphatic. This redundancy is only apparent, since it contributes a sense of emphasis not denoted by the non-redundant equivalent. Repetition is only felicitous, however, if the second expression is at least as pragmatically strong as the first (Horn, 1972; et al.). In *the certain*, the second expression is weaker than the first — **S** is less restrictive than +**H** —, so this collocation is infelicitous. It is a historical accident that an

(in)definite determiner must occur before *certain*: *certain* has more recently been an adjective and pre-nominal adjectives in English must always occur closer to the noun than determiners. Nevertheless, this accident ensured that *certain* would occur only in collocation with *a*, not *the*.

Another seeming problem with our current definition of *certain* concerns Haspelmath's generalization: *certain* semantically presupposes the existence of its referent.[12] First, let us establish wherein this problem lies. The negative sentence (164) is paraphrasable as (165).

(164) I didn't want to see a particular balloon.

(165) There was no particular balloon that I wanted to see.

But if (164) is paraphrasable as (165), why isn't (166) paraphrasable as (165)?

(166) ?I didn't want to see a certain balloon.

If *certain* differs from *particular* only in that the nature of the unspoken restriction is specified for the latter term, (166), too, should still be paraphrasable as (165), it seems; after all, the default interpretation of (165) is that *I had no balloon in mind* as one which I wanted to see — the restriction for both is "that which the speaker has in mind". If (166)

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[12] Enç has argued that the so-called definiteness effect, the selectional restrictions on the noun phrase following *there* in existential assertions, derives from the presence or absence of a presupposition of existence in different types of noun phrases, and moreover, that the possibility of *certain* noun phrases after *there* indicates that they have no presupposition of existence. Consider,

(i) a. There is a thing you must do.
b. There is a certain thing you must do.
c.*There is the thing you must do.

I believe Enç may be onto a correct generalization about the definiteness effect. Nevertheless, Haspelmath may also be correct. The seeming contradiction between their two generalizations arises, I believe, from a conflation of two notions under the term *presupposition*. On the one hand, and this is Haspelmath's use, *presupposition* denotes a state of affairs wherein a proposition escapes the scope of certain operators, notably negation and other irrealis operators. On the other hand, and this is Enç's use, it denotes a state of affairs wherein a proposition is part of the conversational common ground. The first is called semantic presupposition, the second, pragmatic. I shall have more to say about the definiteness effect in § 6.2.3.

is not paraphrasable as (165), if Haspelmath's generalization is correct that specific noun phrases, among which he includes *certain* noun phrases, must take wide scope with respect to negation, then this evidence might lead one to think our choice functional account of *certain* is not adequate.

The key difference between (164) and (166) is that *particular* is behaving like an ordinary adjective which may be negated by *not*, whereas *certain* introduces a choice function. (164) might be continued, "any balloon you have is of interest to me. I'm not interested in any particular one." One cannot negate a choice function determined by the preferences of an individual, however, any more than one can negate an act. Negation may negate the proposition which the choice function contributes towards producing, but it cannot negate the function itself. We may derive a presupposition of existence for *certain* the same way we did for the definite article (see § 2.4.1). The use of *certain* to modify a nominal indicates the speaker's belief in the existence of a choice function defined over the extension of that nominal, namely f_s; if the speaker believes a choice function may be defined over the extension of a nominal, she must believe the nominal has a non-null extension — its extension must at least include the individual chosen by the choice function; the speaker must therefore believe in the existence of this individual.

Note that these last two explanations, the explanations of the indefiniteness and the presuppositionality of *certain* noun phrases, are available only to the indexed choice functional account of *certain*, because only this account unifies the semantics of *certain* with that of the (in)definite determiners. The explanation of the presupposition of existence of the definite article is exploited to explain the presupposition of existence of *certain*. The relations among the restrictions on choice functions available in the choice functional rational implicature approach are exploited to explain the indefinite marking on *certain* noun phrases.

5.3.2 the meaning of *certain*: the choice functional rational implicature approach

As I have said, we can go quite far with an interpretation of *certain* via a choice function known to an e-agent, by default the speaker. It has given us an explanation for most of the empirical facts concerning *certain.* Our current choice functional account of *certain* is not parallel to our account of the (in)definite determiners, however. It defines a choice function by the speaker's preferences, $f_{\mathbf{S}}$. For the (in)definite articles, however, we had to abandon the equivalent interpretation, $f_{\mathbf{H}}$. The deciding class of uses was familiar indefinites, exemplified by (27) and (28) of chapter 2.

(27) I met with a student before class. <u>A student</u> came to see me after class as well — in fact it was the same student I had seen before.
(Gundel, Hedberg, & Zacharski, 1993; example (50); underlining added)

(28) A man with a hat came in followed by a man in suspenders and Gulielma, an acquaintance of mine. The man with <u>a hat</u> said, …

The underlined indefinite noun phrase in these example refers to the same referent as the identical noun phrase in the preceding sentence. This is precisely the context that conditions anaphoric definiteness. The speaker must believe that the hearer has a winning strategy in the game of reference played over the noun phrase, so by our game-theoretical account of (in)definiteness, the speaker should mark the noun phrase as definite. It is thus puzzling that the underlined noun phrase may felicitously bear indefiniteness marking. The solution to this puzzle was to analyze definiteness marking as indicating the speaker's belief that she would be *satisfied* with a choice function determined by the hearer's preferences. If there is some reason why the speaker would not be satisfied with the hearer's assigning the correct referent to the noun phrase, the speaker should mark the noun phrase as indefinite. In the case of (27) and (28), I argued that the noun phrase is marked as indefinite because marking the noun phrase as definite would lead the hearer to derive the wrong implicature from the sentence. Following the same pattern, we may

analyze *certain* not as indicating that the speaker knows a choice function which will select the correct referent, but that the speaker would be satisfied with a choice function determined by the preferences of the appropriate epistemic agent. This gives us the following definition of *certain.*

(167) the revised definition of *certain*

$[\![\textit{certain}\ \mathrm{N'}]\!] = f_{+s}([\![\mathrm{N'}]\!])$

This rational implicature account of *certain* gives us the presupposition of existence we require. If the speaker is satisfied with a choice function determined by the relevant epistemic agent's preferences, this implies there is a choice function, which implies there is some referent for this function to choose. In general, this account of *certain* gives us all the explanatory adequacy of the indexed choice function account, because the speaker's satisfaction with a choice function determined by the e-agent's preferences implies she believes the choice function f_s exists and that she intends to refer to whichever referent this choice function chooses: she intends to refer to the e-agent's choice.

So far the argument in favor of revising the definition of *certain* to that presented in (167) consists in nothing more than parallelism with the (in)definite determiners. The strongest argument will be presented in the next chapter: this revision allows us to give a choice functional rational implicature account of *any* and thereby unify the (non)specific determiners in one paradigm. I shall present an additional argument in favor of the rational implicature analysis of *certain* given in (167) in § 5.4.2 of the next section.

5.4 SOME REMAINING PROBLEMS

5.4.1 inappropriate determiners

The first and least problematic set of problematic data we must confront are instances of *certain* occurring with a determiner other than *a*. The following are all instances which occurred in the texts I examined.

(168) Nor, perhaps, will it fail to be eventually perceived, that behind those forms and usages, as it were, he sometimes masked himself; incidentally making use of them for other and more private ends than they were legitimately intended to subserve. That certain sultanism of his brain, which had otherwise in a good degree remained unmanifested; through those forms that same sultanism became incarnate in an irresistible dictatorship. For be a man's intellectual superiority what it will, it can never assume the practical, available supremacy over other men, without the aid of some sort of external arts and entrenchments, always, in themselves, more or less paltry and base. (MD84)

(169) Nevertheless, some there were, who even in the face of these things were ready to give chase to Moby Dick; and a still greater number who, chancing only to hear of him distantly and vaguely, without the specific details of any certain calamity, and without superstitious accompaniments were sufficiently hardy not to flee from the battle if offered. (MD103)

(170) And some certain significance lurks in all things, else all things are little worth, and the round world itself but an empty cipher, except to sell by the cartload, as they do hills about Boston, to fill up some morass in the Milky Way. (MD228)

(171) To a man whose whole life had consisted of doing one certain thing all day, until he was so exhausted that he could only lie down and sleep until the next day--and to be now his own master, working as he pleased and when he pleased, and facing a new adventure every hour! (J137)

(172) Before Harry could answer she threatened that Ray and she would start a rival shop. "I'll clerk behind the counter myself, and a Certain Party is all ready to put up the money."
She rather wondered who the Certain Party was. (MS260)

I am uncertain just what to make of example (168), so I will set it aside. In examples (169) and (171) *certain* appears to be replaceable with *particular* without any perceptible change in meaning. It does not strike me that this is so with (170), although the OED cites *some certain* as an archaic collocation perfectly equivalent to *some particular*, and I am willing to grant that my qualms may be ill-founded. Example (172)

illustrates a fully productive but less troublesome use of *certain*. Here, *certain* is being used metalinguistically, the party is described as *the* certain party because it was earlier described by the phrase *a certain party*. This perhaps is the use of *certain* exemplified in (168) as well.

What all of these examples illustrate is that *certain* is in some instances treated more like an ordinary attributive adjective. This raises a difficulty only because a difference in syntax suggests a difference in sense and a parallelism in syntax suggests a parallelism in sense. I am arguing that *certain* is parallel in sense to three other determiners, so it would be desirable for it to have determiner-like syntax. These five examples do not show that *certain* does not have determiner-like syntax as much as they suggest *certain* may, as the OED claims, be polysemous (keep in mind that we are not speaking here of the predicate *certain* found in *he was certain she would come*). The meaning illustrated in examples (168)–(171) corresponds to the OED's A.I.1.a — "Determined, fixed, settled…". That which I have been arguing for corresponds to the OED's A.II.7.a — "Used to define things which the mind definitely individualizes or particularizes…". The possibility of two meanings for *certain* may increase one's skepticism regarding all my earlier generalizations about the use of *certain*; who's to say all of these generalizations concern the same *certain*?

Some increased skepticism regarding my generalizations is warranted, but I believe not much. In the citations provided by the OED, the *particular*-like meaning of *certain*, A.I.1.a, occurs with determiners other than *a* with perfect facility (3 times in 11 examples), the other meaning, A.II.7.a, does not occur with them at all (23 examples). Since instances of *certain* with a determiner other than *a* are so few, we may safely assume that the *particular*-like meaning of *certain* occurs only infrequently. Also, note that Enç (1991) described *certain* as never occurring with determiners other than *a*. All of the texts which contain instances of *certain* with determiners other than *a* are from the 19th or early 20th century. Enç did not cite any corpus she examined in studying the use

of *certain*, so we may assume that she meant to be describing late 20th century usage. Furthermore, we may assume from the date of the most recent citations in the OED for the two uses, 1866 for the problematic A.I.1.a and 1887 for A.II.7.a, that their definition of this word was written in the late 19th century, since one of the OED's strengths is the thoroughness of its citations. This does not mean that one should not be skeptical as to the homogeneity of my data, but if there is a *particular*-like use of *certain*, we have little evidence that it persists in 20th century usage.

5.4.2 problematic operators

The second set of problematic instances in the corpus I examined is still smaller but I think it deserves comment. These are instances in which *certain* occurs seemingly inside the scope of an operator which should disallow speaker knowledge of the necessary choice function. In the two instances below, I have underlined both the expression introducing the offending operator and *certain*.

(173) But there are a <u>certain</u> number of very dazzling men in the world, <u>no doubt</u>; and if there were only one it would be enough. (PL103)

(174) We've liked you because—because you've reconciled us a little to the future. <u>If</u> there are to be a <u>certain</u> number of people like you—à la bonne heure! (PL332)

In (173), the expression *no doubt* implies that the speaker is making a reasonable deduction, not asserting certain knowledge. The speaker does not know the number of men, nor is he claiming to. (174) is largely parallel to (173), though the uncertainty of the speaker is more apparent.

There are two factors, I believe, which give us license to set aside examples such as (173) and (174). First, *certain* is occurring in a particular construction: expression of quantity + partitive noun phrase. This construction has its own, not entirely compositional semantics. Judging from which noun governs number agreement, the head of the noun phrase is not the first noun, but the object of the partitive expression.

(175) a.*There is <u>a couple of men</u> sitting over there in the shade.

b. There are <u>a couple of men</u> sitting over there in the shade.

(176) a. There is <u>a couple</u> sitting over there in the shade.

b.*There are <u>a couple</u> sitting over there in the shade.

Compare these to (177).

(177) a. There is <u>a tangle of ropes</u> sitting over there in the shade.

b.?There are <u>a tangle of ropes</u> sitting over there in the shade.

c.*There are <u>a knotty tangle of ropes</u> sitting over there in the shade.

The more semantically jejune the expression of quantity, the more likely it is to be understood as a modifier rather than the head of the expression. Indeed, the most semantically empty expressions of quantity, together with the article that may precede them and the preposition that may follow, linguists standardly call determiners. *A couple of* may fall into this category; *a few* certainly does. Furthermore, the semantics of the quantity expression varies according to whether it is understood as a modifier or as the head. If we hear *a couple comes in*, we understand that we have been told something about two people. If we hear *a couple come in*, we understand that we have been told something about roughly two people, maybe three, maybe four. I do not wish to float any theories as to how best to analyze quantifier expressions such as these. I do wish to point out that their analysis is not trivial. *A certain number of* should be analyzed like *a couple of*: it is a complex determiner. Thus it is not so obvious that instances such as (173) and (174) present counter-examples to our analysis of the determiner *certain*.

Be this as it may, by far the stronger argument against (173) and (174) as counter-examples is that the formal interpretation of *certain* we have adopted is f_{+s}, not f_s. The speaker is indicating that she would be *satisfied* with a choice function determined by her own preferences, not necessarily that she knows a choice function which will select the

correct referent, though this is usually implied. This means in effect that she may not know the precise referent which will verify her assertion, but that she prefers her own choice to anyone else's. This weakened sense of *certain* will cope perfectly well with (173) and (174). In both, the speaker is indicating that he is refraining from naming publicly a belief in a particular number — this is in keeping with choice functions denoted by either $f_{+\mathrm{S}}$ or f_{S}. The sticking point was that in neither example is the speaker necessarily committing himself publicly to holding a particular belief privately. This is what a choice function of the form f_{S} would require, but not a function of the form $f_{+\mathrm{S}}$.

5.5 CONCLUSION

Under the rational implicature account, *certain* introduces the restriction +**S** onto the choice function over the nominal to which it is appended. This indicates that the speaker will be satisfied by a choice function determined by the preferences of the epistemic agent **S**, who is the speaker herself except in unusual cases. This rational implicature account of *certain* is an elaboration of the account of Hintikka (1986) and Enç (1991), and might be viewed as an elaboration of one of the definitions provided in the OED. The chief advantage of the rational emplicature account as an account of *certain* is the number of nuances of usage for which it provides an explanation. Furthermore, it accounts for the existential presupposition of *certain* and why this determiner occurs almost exclusively with the indefinite article. The primary advantage of the rational implicature account, however, is that it allows us to unify *certain* with *any* and the (in)definite determiners in one explanatory framework. This achieves elegance and economy of theoretical apparatus.

Chapter 6: *any*

This chapter concerns the determiner *any*. In many respects *any* is a strange determiner relative to the others that we have considered. For one thing, it is the only one of the four which cannot introduce a discourse referent.

(1) a. [The man you need to talk to]$_i$ just walked into the room. That's him$_i$ there.

b. [A cat]$_i$ just jumped onto the screen door. It$_i$ seems to want to come in.

c. [A certain Frank Purefoy]$_i$ came by this afternoon. He$_i$ left this letter.

d. [Any owl]$_i$ hunts mice. *It$_i$ finds them both delectable and nutritious.[1]

For another, it is the only one that behaves truly like a universal quantifier (the test used in (2) is the approximative adverb test; see § 6.2.3).

(2) a. Absolutely all lions have bony skeletons.

b. Absolutely every lion has a bony skeleton.[2]

c.* Absolutely the lion has a bony skeleton.

d.* Absolutely a lion has a bony skeleton.

e.* Absolutely a certain lion has a bony skeleton.

f.* Absolutely most/many/some/few/half of all/fifteen lions have a bony skeleton.

g. Absolutely any lion has a bony skeleton.

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[1] Note that in an example such as (i) the pronoun refers to an entity whose existence and uniqueness is contextually inferable.

(i) I didn't see any clerk behind the counter. He must be in the back room.

The pronoun in this example is not anaphoric to a previously introduced discourse referent any more than the second definite noun phrase in (ii) is.

(ii) The store looks empty. The clerk must be in the back room.

[2] As is often the case for such tests of universality, *each* is a counterexample. See § 7.1.

Any is the most unequivocally polarity sensitive (PS) of the four non-quantificational determiners. In fact, it is the paradigmatic negative polarity item.

(3) a. I didn't see any cat hanging by its claws from the back door screen.

b.*I saw any cat hanging by its claws from the back door screen.

What's more, *any* in its polarity sensitive use appears to be existential, not universal (the test used in (4) is the existential-*there* test; see § 6.2.2).

(4) a. There isn't a person who can help you now.

b. There isn't anyone who can help you now.

c.*There isn't everyone who can help you now.

Any is the only one of the non-quantificational determiners that seems to be polysemous in this way. In spite of these peculiarities, I will seek to show that *any* is just another of the choice-functional, non-quantificational determiners. On the one hand, it is the counterpart of *certain* in opposition to *a* and *the*. On the other, it is the counterpart of *a* in opposition to *the* and *certain*. I shall seek to show that all the nuances of its behavior follow as rational implicatures from the particular restriction it denotes on choice functions, –**S**. *Any* indicates that the speaker would not be satisfied with a choice function over the nominal were it determined by her own preferences. Crudely put, *any* indicates that the speaker does not intend to refer to a particular individual.

The pattern of use of *any* is quite subtle and complex. In this chapter I develop the empirical facts gradually. First, in § 6.1, I discuss the basic pattern in the data: *any* has characteristics of both an existential and a universal determiner, and which characteristics are dominant depend on the context of use. In § 6.2 I explore these characteristics, considering arguments that *any* is univocal and universal, univocal and existential, or polysemous, both universal and existential. Following this in § 6.3 I survey all the contexts of use of *any* and the oddities of its usage. In § 6.3.1 I distill this overview down

into certain generalizations, chief among these being that *any* N' is closely paraphrasable by an expression of the form *even the least/most remarkable* N'. I examine the advantages and disadvantages of such an analysis in § 6.3.1.1. I conclude that an analysis of *any* along these lines is inadequate in that it cannot account for the neutral, non-emphatic uses of *any*. By this point I will have massaged the principal semantico-pragmatic patterns of use out of the empirical distribution of the expression. In § 6.4 I will provide the rational implicature account. Finally, in § 6.5 I will review particular alternative analyses in greater detail; and in § 6.6 I will conclude.

6.1 THE BASIC PATTERN IN THE USE OF *ANY*

I shall begin my discussion of *any* by reviewing the basic pattern of usage and the semantic analyses which it immediately suggests. This basic pattern is illustrated in (5)–(7).

(5) a. I didn't see anyone.

b.*I saw anyone.

(6) Did you see anyone?

(7) If I see anyone, I'll give you a call.

The meaning of each of these sentences, excluding (5)b, may be represented in first-order predicate calculus by either of two equivalent formulas — I adopt an ad hoc operator '?' to represent interrogative force and, to clarify issues of scope, I adopt the prefix operator '⊃' to represent conditionals; '*i*' is an indexical signifying the speaker; '*u*', an indexical signifying the hearer.

(5)a' a. $\neg(\exists x)(i \text{ see } x)$

b. $(\forall x)\neg(i \text{ see } x)$

(6)' a. $?(\exists x)(u \text{ see } x)$

b. $(\forall x)?(ua \text{ see } x)$

(7)' a. $\supset((\exists x)(i \text{ see } x), (i \text{ call } u))$

b. $(\forall x)\supset((i \text{ see } x), (i \text{ call } u))$

In every case, *any* may be analyzed as introducing either an existential or a universal quantifier. In every case, there is an operator with respect to which this quantifier takes scope. If the quantifier is existential, it must take narrow scope with respect to this operator. If it is universal, it must take wide scope. The unacceptability of (5)b stems, one might speculate, from the absence of any operator with respect to which *any*'s quantifier might take scope.

From these examples it appears that the two analyses, that *any* introduces an existential quantifier and that it introduces a universal quantifier, are perfectly equivalent. There is something a little odd about (6)'b. It suggests that (6) is equivalent to an endless series of questions about particular individuals. This seems odd because (6) is in fact a single question and actual questions cannot be infinite. Whatever oddity (6)'b might seem to have need not bother us inordinately, however, as the operator '?' in (6)'b is a logical representation of interrogative force. Though a question is singular, it might be logically equivalent to an unlimited series of questions. At this point, it appears that choosing $\exists$ or $\forall$ to translate *any* is more a matter of esthetics than of logical necessity.

Consider (8), however.

(8) **A**: I was surprised to see Hooty terrorizing Squeaky. They usually portray Hooty as a peaceful, bookish vegetarian.

B: But any owl hunts mice.

Here we have *any* in a sentence without an obvious operator with respect to which it could take scope. On the one hand, this throws the speculative analysis of *any* as requiring such an operator into question. On the other, because the interpretation of *any* in (8) is universal, this seems to argue in favor of a wide scope universal analysis. But now consider (9).

(9) An owl hunts mice.

Here we have an indefinite article, which is most often treated as existential and which is never given a univocal universal analysis. In (9), though, the indefinite noun phrase seems to have universal quantificational force. (9) is a generic sentence, and in fact certain generic noun phrases, indefinites, generic pronouns, and aphoristic generics — *an owl*; *you*, *one*; *he who …*, *a/the man who …*, *someone who …* —, are almost perfectly coextensive with universal *any* in their contexts of occurrence. This seems to argue in favor of a narrow scope existential analysis. Which is it to be, wide and universal or narrow and existential?

For descriptive purposes, it is useful to cut the Gordian knot and postulate two varieties of *any*, negative polarity (NP) *any*, which is illustrated in (5)–(7), and free choice (FC) *any*, which is illustrated in (8); the first is narrow and existential and the second is wide and universal. The central concern of much work on *any* has been whether these two varieties correspond to different meanings associated with the form *any*. The hypotheses which have been advanced, in approximate chronological order, are that *any* is monosemous and universal, that it is polysemous, NP *any* being existential and FC *any* being universal, and that it is monosemous and existential.

6.2 IS *ANY* UNIVERSAL, EXISTENTIAL, OR BOTH?

The choice functional perspective redefines our options a bit. *Any* might be a reflex of neither the universal nor the existential quantifier. Nevertheless, it is illuminating to consider the arguments in favor of one or the other first order predicate logic interpretation, as this reveals the patterns of use in which *any* participates. I will now review the arguments as to whether *any* is ambiguous or univocal, and in the latter case, whether it is a reflex of the existential or the universal quantifier.

6.2.1 *any* is universal

The simplest and most salient analysis of *any*, that which early on received the most support, is that it is a univocal reflex of the universal quantifier. The arguments on behalf of this position are: 1) a univocal analysis is to be preferred, independently of everything else; 2) in most contexts licensing *any*, either of two logical forms, one with a wide scope universal and one with a narrow scope existential, are available; and more importantly, some interpretation using the universal quantifier is available; 3) in free choice uses, it seems that only the universal quantifier provides an adequate interpretation of *any*.[3] This analysis of *any* has been endorsed by Quine (1960), Lasnik (1975), Hintikka (1977), *inter alia*. As this analysis is now largely out of vogue (but see Eisner, 1994), I will argue against it only in discussing alternative theories.

6.2.2 *any* is existential

Of the three arguments just cited in favor of a univocal universal analysis of *any*, the first two are only arguments in favor of some univocal analysis. Only the last, the occurrence

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[3] In addition to these arguments, on occasion the binding problems classified as donkey anaphora (Geach, 1962) have been adduced as an argument (e.g., Carlson, 1980). For instance, "If anyone comes by, show him in" seems to exhibit binding of the pronoun by *any*, which follows directly if *any* is a wide scope

of free choice *any*, is an argument strictly in favor of the universal analysis. The univocal universal analysis is seen to be on yet shakier ground if we broaden the scope of our investigation somewhat. First of all, there are many arguments showing that PS *any* behaves as one expects an existential quantifier to behave. Were *any* a universal which necessarily takes wide scope with respect to such operators as negation, *any* noun phrases should have a de re interpretation in many contexts, but they never do. For instance, consider (10), which would have the de re wide scope universal interpretation (11) if a de re interpretation were possible ((10) is taken from Carlson (1980), who cites Abbott (1976) as its source, who cites George Lakoff (p.c.)).

(10) Elsie decided not to marry a man who has any money.

(11) $(\forall x$: money)(Elsie has decided not to marry a man who has x)

So long as the universal quantifier translating *any* must take wide scope with respect to negation, (10) could also have a de dicto interpretation in which the universal quantifier is inside the scope of the propositional attitude predicate.

(12) (e has decided)[$(\forall x$: money)$\neg$(e marry a man who has x)]

No such interpretation is available for (13).

(13) ?Elsie did not decide to marry a man who has any money.

(14) $(\forall x$: money)$\neg$(e has decided)[(e marry a man who has x)]

Since the propositional attitude predicate is inside the scope of negation in (13), on the wide scope universal interpretation of *any* (13) can only have the de re interpretation (14)

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universal but seems paradoxical if it is a narrow scope existential. This argument does not hold a lot of

analogous to that represented in (11). In actuality, neither (10) nor (13) ever has such an interpretation.

Another flaw in the wide scope universal analysis of PS *any* is that it makes the wrong predictions about variable binding, assuming the standard predicate calculus treatment of the latter.

(15) a. Fred forbade us to eat each mushroom only after we ate it.

b.* Fred forbade us to eat any mushroom only after we ate it.

(16) ($\forall x$: mushroom)(Fred forbade us to eat x only after we ate x)

The universal analysis predicts that (15)b should have the same analysis as (15)a, namely, (16). It cannot predict, therefore, the ungrammaticality of (15)b, which on the existential analysis follows from the inaccessibility of *it* to its antecedent *any mushroom*; the existential quantifier must take scope inside of the verb *forbade*, and hence it should not be able to bind the pronoun in the subordinate clause.

An argument which takes us a step or two away from the semantics of predicate calculus per se concerns mass nouns. The universal quantifier is taken to distribute over a set of individuals. This means the analysis of (17) should be (18).

(17) a. He doesn't have any cheese.

b. We haven't made any progress.

(18) a. ($\forall x$: cheese)(He doesn't have x)

b. ($\forall x$: progress)(We haven't made x)

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water, though, as the same binding pattern holds if we replace *anyone* with *a person*.

This strikes one as a little odd, because mass nouns do not seem to correspond to a collection of individuals in any obvious way. The narrow scope existential analysis is a little less problematic.

Example (17) provides us with another, stronger argument against the universal analysis if we remove ourselves still further from the particulars of predicate calculus. The direct object argument position of these and other predicates accepts noun phrases taken to be reflexes of the existential quantifier, but it rejects those taken to be reflexes of the universal quantifier.[4]

(19) a. He has a little/some/*all/*every courage.

b. We made a little/some/*all/*each progress.

Again, the problem here appears to derive from the oddity of quantifying distributively over a mass noun. Consider (20).

(20) He has every virtue that could dignify a gentleman.

In (20) the universal distributes over types of mass nouns, which are enumerable, and it is perfectly acceptable. Since *any* NPs are the direct objects of these verbs in (17), *any* patterns in this case like the reflexes of the existential quantifier and unlike the reflexes of the universal quantifier.

Another argument position that distinguishes between determiners that seem to be universal versus those that seem to be existential is that immediately following the existential predicate *there is*.

(21) There is someone/a person/*everyone/*all people from the bar at the door.

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[4] This pattern does not hold for partitive or covertly partitive noun phrases.

(i) He has all (of) the cheese.

Again, polarity sensitive *any* patterns more like an existential than a universal.

(22) There isn't anyone from the bar at the door.[5]

Finally, there are varieties of speech acts which license *any* where a wide scope universal quantifier does not give us an adequate interpretation. These speech acts are questions and commands. If *any* is a wide scope universal, then (23) is truth conditionally equivalent to (24).

(23) Did you see anyone at the party?

(24) $(\forall x)$?(You saw x at the party)

(24) says that (23) is equivalent to an indefinite series of questions about particular individuals: it transforms (23) into an infinite series of *de re* questions. This may be a fair logical equivalence, but one may utter (23) without knowing about whom one might ask whether he was seen at the party; (24) confers on (23) a de re interpretation which it does not seem (23) has. Consider now (25) with interpretation (26) (I adopt '!' as an operator signifying imperative force).

(25) [You won! Congratulations!] Take any item in the store!

(26) $(\forall x$: in store)!(You take x)

Clearly someone uttering (25) would not intend that the addressee take every item in the store, but that is the interpretation represented in (26). Another peculiarity of sentences of

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[5] The behavior of the universally determined noun phrases after a negated existential *there* is somewhat variable.

(i) a.?There wasn't every student in the class at the meeting.
b.*There isn't every student in the class at the door.

imperative form containing *any* is that they lack full imperative force; they are suggestions rather than commands. However we explain this, we might utilize it to improve (26): (26) is not a series of commands, one for each item in the store, that the hearer take the item; it is a series of suggestions which may be declined. Even so, someone uttering (25) most likely intends, arguably can only intend, that the hearer take just one item, and this is not the meaning of (26) even if '!' is weakened from an imperative operator to a suggestion operator. Perhaps one might derive this restriction on the meaning of (26) via some implicature. How, then, would we interpret (27)?

(27) Take any single item in the store!

Does this command utterly misfire or is it merely understood uncooperatively if the hearer takes two items? The non-redundancy and non-contradictoriness of (28) suggests that the possibility that one might take more than one item is itself only an implicature at best.

(28) Take any item in the store! But bear in mind you may only take one thing.

Exceptive clauses in general cannot cancel a presupposition or entailment.[6]

(29) ?You may play again, but not if you've played before.

(30) ?You may kill that fly, but you may not cause it to die.

Contrary to the wide scope universal interpretation in (26), (28) does not entail an indefinite series of de re commands.

(i)a was suggested to me by Jean-Pierre Koenig, for whom it is a perfectly acceptable sentence. (i)b and the judgments of relative acceptability in (i) are mine. See § 6.2.3 for further discussion of this construction.

[6] However presuppositions and entailments might be defined for permissive speech acts, I assume (29) and (30) involve their cancellation in an exceptive clause.

The linchpin of the argument in favor of a univocal universal analysis of *any* is the seeming impossibility of giving an existential account of free choice *any*; but even this argument is ill-founded. On the one hand, it provides no explanation for the exclusion of *any* from certain contexts.

(31) a.*When he looked out the window, Herbert found anyone standing on the porch.

b.*Everyone in this town knows anything about Bob.

This pattern of use would have to be stipulated in some way.

On the other hand, those contexts which accept free choice *any* are precisely those in which other seemingly existentially quantified expressions behave more like universals. These contexts are those in which indefinite noun phrases, the pronouns *one* and *you*, and the aphoristic noun phrases have generic force. (32) exemplifies contexts in which neither *any* nor the generics can occur; (33), contexts in which they can.

(32) a.*<u>Anyone</u> handed me this pamphlet as I was walking past the corner.

b.*<u>A gnat</u> bit <u>an elephant</u> at 2:00 p.m. yesterday.[7]

c.*<u>Gnats</u> bit <u>elephants</u> at 2:00 p.m. yesterday.

d.*<u>You</u> are bothering me.

e.*<u>One</u> bought this umbrella on sale.

f.*<u>He who lives in a glass house</u> is standing on the porch.

g.*<u>The man who lives in a glass house</u> is standing on the porch.

h.*<u>A man who lives in a glass house</u> is standing on the porch.

i.*<u>Someone who lives in a glass house</u> is standing on the porch.

(33) a. <u>ANYONE</u> should save for a rainy day.

b. <u>A young man</u> should save for a rainy day.

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[7] Keep in mind that all the underlined noun phrases in these examples are to be understood with generic force. Examples (b)–(d) and (g)–(i) have acceptable readings, but not acceptable generic readings.

c. Young men should save for a rainy day.

d. You should save for a rainy day.

e. One should save for a rainy day.

f. He who lives in a glass house should save for a rainy day.

g. The man who lives in a glass house should save for a rainy day.

h. A man who lives in a glass house should save for a rainy day.

i. Someone who lives in a glass house should save for a rainy day.

Furthermore, universal noun phrases may be contextually restricted (in (34) and (35), the primed member of each pair is a paraphrase of the contextually unrestricted reading of the unprimed member).

(34) a. Come to the party tonight. Everyone will wear a silk hat. ≠

a'. Come to the party tonight. #Everyone in existence will wear a silk hat.

b. I like this company. Everyone works hard and takes pride in what they do. ≠

b'. I like this company. #Everyone in existence works hard and takes pride in what they do.

Generic noun phrases, and FC *any* noun phrases, cannot be contextually restricted.

(35) a. Come to the party tonight. #Anyone/A (generic) person will wear a silk hat. =

a'. Come to the party tonight. #Every (ordinary) person in existence will wear a silk hat.

b. I like this company. #Anyone/A (generic) person works hard and takes pride in what they do. =

b'. I like this company. #Every (ordinary) person in existence works hard and takes pride in what they do.

Not every language has a determiner equivalent to *any*, but in languages which have noun phrases equivalent to those in (33) these noun phrases have a generic

interpretation in the equivalent contexts (Krifka et al., 1995). Furthermore, these are also the contexts in which we find “free choice disjunction”, where a disjunctive connective has the force of conjunction (q.v. Kamp, 1974).

(36) a. Bill or Sue may go the library to read. The rest of you must continue with the quiz. =

a'. Bill may go to the library and Sue may go to the library.

a". Anyone may go to the library now.

b. You may have an apple or an orange. =

b'. You may have an apple and you may have an orange.

b". You may have anything you like.

Disjunction may be viewed as existential quantification over the disjuncts, and conjunction, as universal quantification over the conjuncts. Thus, free choice disjunction is yet another case in which those contexts which accept FC *any* give some sort of universal interpretation to what is otherwise understood to be an existential expression. Every language has disjunction, and in every language disjunction has the free choice interpretation in just these contexts. This strongly suggests that the generic interpretation of these noun phrases is derived from the existential meaning in these contexts. The alternative would be to postulate a special existential quantifier which arbitrarily is quasi-universal in a certain set of pragmatico-semantic contexts and which is imposed upon all languages by Universal Grammar. I presented a theory of the derivation of a universal interpretation of existentials in § 3.2.3.2: these contexts are compatible with the description of an arbitrary individual or situation, from which, by universal generalization restricted by the game of reference, one infers a generic assertion. We would achieve much theoretical economy, therefore, if we could attribute the universal force of free choice *any* to this same mechanism.

6.2.3 PS *any* is existential and FC *any* is universal

From all of these arguments we must conclude that polarity sensitive *any* is an existential quantifier, and it looks at this point as though we must conclude that free choice *any* is an existential quantifier as well. I will now consider reasons to doubt the second conclusion. Let us consider why we might conclude, as many have, that FC *any* is a universal quantifier.

The natural language universal determiners (usually) cannot occur after existential *there*. The natural language existentials can.

(37) a.*There is everyone/each person/all the people you know at the party.

b. There is a person/someone you know at the party.

FC *any*, too, cannot occur in this construction.

(38) *There is anyone you know at the party.

This has been put forward as a straightforward diagnostic separating the universal quantifiers from the existentials (Carlson, 1980, 1981). It should be noted that this same phenomenon is more commonly known as the definiteness effect (Milsark, 1974; Safir, 1985; *inter alia*), because definite noun phrases are for the most part excluded from this construction.

(39) *There is the superintendent here.

Another class of noun phrases excluded from the existential *there* construction are generics. None of (40) are acceptable if the underlined noun phrases are understood as generic.

(40) a.*There is <u>a platypus</u> in the streams of Australia.

b.*There is <u>he who lives in a glass house</u> at the door.

c.*There is <u>someone who loves his wife</u> at the door.

It is not the case that type-denoting NPs per se are excluded from this construction, as indefinite taxonomic generics are perfectly acceptable.

(41) There is a species of rodent in Africa called the naked mole rat.

It is also not the case that definite noun phrases are always excluded.

(42) There are the following arguments against this position. First, …

Milsark (1974) attempts to account for the definiteness effect by categorizing noun phrases into strong and weak varieties. Strong NPs, such as definite and universal noun phrases, are excluded from the existential *there* construction, weak NPs, which is everything else, are admitted. This account has difficulty accounting for examples such as (40)a,c and (42), however. There is another tradition of analysis which focuses on the information status of the post-verbal NP (PVNP) — whether it is "old" or "new" in some sense (Erdmann, 1976; Rando & Napoli, 1978; Ziv, 1982; Penhallurick, 1984; Holmback, 1984; Lumsden, 1988; Prince, 1992; McNally, 1992; Abbott, 1993; Ward & Birner, 1993; Birner & Ward, 1993). I will take the last in this, Birner & Ward (1993), as representing the culmination of this tradition.

Birner & Ward argue that the post-verbal NP (PVNP) in the existential *there* construction must introduce a "hearer-new" referent (q.v. Prince, 1992). The strength of their analysis is that it seems to account for both the ordinary weak PVNPs and the strong ones such as (42) which are problematic for Milsark's analysis. Birner and Ward provide the following taxonomy of definite PVNPs in existential-*there* sentences.

(43) Classes of definite PVNP in *there* sentences:

I Hearer-old entities marked as hearer-new

II Hearer-new tokens of hearer-old types

III Hearer-old entities newly instantiating a variable

IV Hearer-new entities with unique IDs

V False definites

Some examples illustrating their categories are (44)–(48).

(44) I Hearer-old entities marked as hearer-new:

A: Did you have anything to read on the trip?

B: There was that book you gave me.

(45) II Hearer-new tokens of hearer-old types:

Howie and Eileen's breakup was a complete mess. There were the usual depressing reasons for that, of course.

(46) III Hearer-old entities newly instantiating a variable:

A: Are there any players on the field that I would know?

B: There's Brenner, the guy who signed your ball, that guy with the eyepatch…

(47) IV Hearer-new entities with unique IDs:

Don't lose heart. There's always the chance that he was simply delayed at the airport.

(48) V False definites:

There are all sorts of reasons why he might be late.

I will take Birner & Ward's theory as essentially correct. I will only note a few deficiencies.

Birner & Ward's theory provides an account for why universal and definite generic NPs do not occur as PVNPs in the existential-*there* construction: universals and definite generics pragmatically presuppose the existence of their referents. *Every five-legged man eats oats* is certainly not false if there are no five-legged men; though to utter this sentence is to imply that one believes in the existence of five-legged men. *The fly-winged yuzz is green* is neither true nor false but infelicitous. To utter it is to imply that one believes in the existence of fly-winged yuzzes.

Indefinite generics prove to be more difficult to handle, because they can refer to ad hoc kinds. Consider *a fly-winged yuzz is green*: the kind of which any fly-winged yuzz is an instance is surely novel, and any particular fly-winged yuzz therefore is hearer-new. Nonetheless, indefinite generics cannot occur as PVNPs.

Another problematic class of instances are statements of *non*-existence, of which PS *any* provides an instance.

(49) a. There's no one who can save you now!
b. There isn't anyone who can save you now!

The problem is that it is hard to say in what sense *no one* or *anyone* could be hearer-new. This problem is actually much larger: PS *any* doesn't seem ever to introduce a hearer-new referent.

(50) a. If there's anyone who can save you now, I don't know who it is.
b. Is there anyone who can save you now?

I propose that the explanation for the infelicity of indefinite generics as PVNPs is that the existential-*there* construction must assert, deny, question, or otherwise raise as an issue the status of an individual which is not mutually identified but which is mutually identifiable. Definite noun phrases are not satisfactory PVNPs because in most cases their referent is mutually identified inasmuch as it is mutually known; universals and definite

generics likewise. The examples in (49) serve to deny the existence of an individual who is not mutually identified but who, if he did exist, could be mutually identified. The sentences in (50) raise the status of such an individual in other ways.

The problem with indefinite generics, I propose, is that they refer to indeterminate individuals, which in ordinary discourse cannot be mutually identifiable — for them to be mutually identifiable would be for them to be particular, specific, not indeterminate. This proposal has the advantage that it can account for those instances in which indefinite generics do occur as the PVNP in the existential *there* construction, which I shall now discuss.

Ordinarily, indefinite generics cannot antecede pronouns in discourse.

(51) A cat$_i$ is small and furry. *It$_i$ is eating the cheese I put on the floor for it.

Similarly, they cannot antecede discourse anaphoric definite NPs.

(52) A cat$_i$ is small and furry. *The cat$_i$ is eating the cheese I put on the floor for it.

There are contexts, contexts of "telescoping" or "modal subordination" (see Roberts, 1997), where such anaphora is possible. These are contexts in which there is an extended description of the indeterminate; these may be conceived of as contexts in which a particular individual of the type under discussion is being described in an indeterminate context (see the discussion of aphoristic generics in § 3.2.5). Consider (53).

(53) a. A cat$_i$ is small and furry. It$_i$ has four legs.

b. A cat$_i$ is small and furry. The whiskers that grow out of its$_i$ face are stiff.

Within the indeterminate situation containing an indefinite generic, indeterminate NPs can occur as PVNPs.

(54) A cat is small and furry. There is a spot under its chin where it likes to be scratched.

The explanation of this pattern is that within the indeterminate situation individuals are mutually identifiable — in whichever situation the cat might be in, it has whiskers, and these are thus identifiable within the situation as the whiskers of the cat.

Just how one should formalize this hypothesis I do not know, nor shall I make it my business at the moment to field proposals (this construction is the topic of discussion in § 6.4.8). In fact, it is not crucial to our rational implicature account of *any* that this hypothesis be right. All that is necessary is that we note the infelicity of indefinite PVNPs in examples such as (40)a. The existential-*there* construction does not distinguish *every* from *a*, because the indefinite article, too, cannot occur in this construction if it has the generic interpretation. The existential-*there* construction does not separate existentials from universals.

One argument Carlson puts forward against the treatment of FC *any* as a generic existential is that FC *any* noun phrases do not require a relative clause modifier, whereas aphoristic *some*, *the*, *those*, and personal pronouns do. I discussed this phenomenon in § 3.2.5 and I left the issue unresolved. To recapitulate, it seems that noun phrases with restrictive relative clauses are particularly apt to be interpreted attributively rather than referentially, in the terminology of Donnellan (1966), and as such they are particularly suited to refer to arbitrary individuals of a certain type rather than specific individuals. Be this as it may, all that is relevant for our purposes is that certain generics, namely indefinite generics, do not require a restrictive relative clause, so again this diagnostic does not truly divide existential and universal determiners. I will not consider other arguments which only succeed in showing that FC *any* noun phrases are like universal noun phrases only inasmuch as those pattern like generics. There are a number of patterns of usage which truly ally FC *any* with universal determiners and separate it from determiners used generically. I will now consider these.

Universal noun phrases, unlike existentials under any use, may be modified by “amount relatives”.

(55) a. Every dog there is likes a rawhide bone.

b.*Some dog there is likes a rawhide bone.

c.*A dog there is likes a rawhide bone.

d.*The dog there is likes a rawhide bone.

FC *any* also may be modified by an amount relative.

(56) Any dog there is likes a rawhide bone.

Universal noun phrases, unlike existentials under any use, may trigger negative polarity items in their restriction.

(57) a. My dog likes every rawhide bone he has ever met.

b.*My dog likes some rawhide bone he has ever met.

c.*My dog likes a rawhide bone he has ever met.

d.*My dog likes the rawhide bone he has ever met.

FC *any* also may trigger negative polarity items.

(58) My dog likes any rawhide bone he has ever met.

Finally, universal determiners, unlike existentials under any use, may be modified by approximative adverbs such as *almost*, *nearly*, and *absolutely*.

(59) a. My dog likes almost every rawhide bone.

b.*My dog likes almost some rawhide bone.

c.*My dog likes almost a rawhide bone.

d.*My dog likes almost the rawhide bone.

FC *any* also may be modified by approximative adverbs.

(60) My dog likes almost any rawhide bone.

This last argument is the only one addressed by Kadmon & Landman (1993) in their defense of their analysis of *any* as existential, and I think not without reason. I shall seek to show that all of these patterns derive from the exceptionlessness of generalizations made with universal determiners or FC *any*.

Describing the first of these tests as involving an amount relative is, I believe, a little misleading; though I will continue to use this terminology. What the relative *there is* achieves is not to indicate the amount or number of entities involved, but to assert that no entities fitting the description are to be excluded. This is shown by the interchangeability of *there is* with such expressions as *that exist* or *in existence*.

(61) a. Every dog <u>in existence</u> likes a rawhide bone.
b. Every dog <u>that exists</u> likes a rawhide bone.
c. Every dog <u>with a tooth in its gums</u> likes a rawhide bone.
d. Every dog <u>born into this world</u> likes a rawhide bone.
e. Every dog <u>on Earth</u> likes a rawhide bone.

(62) a.?Some dog <u>in existence</u> likes a rawhide bone.
b.?Some dog <u>that exists</u> likes a rawhide bone.
c.?Some dog <u>with a tooth in its gums</u> likes a rawhide bone.
d.?Some dog <u>born into this world</u> likes a rawhide bone.
e.?Some dog <u>on Earth</u> likes a rawhide bone.

Amount relatives are unacceptable with existential noun phrases because they add no relevant information, nor do they repeat information which could be startling and thus might be emphasized. One assumes when one hears an assertion concerning “some dog” that this is an assertion true of some dog in existence. To assume otherwise would be to reduce the assertion to meaninglessness: under what conditions is it true that a dog which may or may not exist, a dog of ambiguous existence, likes a rawhide bone? If one assumes that the speaker is being cooperative, one must assume that her assertion

concerns a dog in existence. It serves no purpose for the speaker to confirm this assumption, and moreover, to do so would direct the hearer to seek, fruitlessly, some implicature justifying this violation of the maxim of manner.

Put in other words, if one assumes a minimal degree of cooperativity on the part of the speaker, the desire to communicate a proposition with some true and relevant entailments, one should take an existential assertion literally. The same cannot be said of universal assertions. A universal assertion may entail a true and informative proposition even when it is literally false. In this case, we say that the universal assertion is an exaggeration. When one hears an assertion concerning "every dog", one assumes that there may be some unspoken restriction on what counts as a dog — even if the assertion is not literally true of every dog in existence, it is not trivial so long as it is true of all members of a suitably restricted set of dogs. Hence it is informative to hear that the restriction is indeed merely those dogs in existence.

To examine this in formal terms, a universal assertion ϕ predicating $\lambda x.p$ of individuals of type X cannot be made stronger, in the sense that if $\lambda x.p$ holds of all individuals of type X, there is no subset Y of X such that one might predicate $\lambda x.p$ of all x: $x \in Y$ and thereby unilaterally entail the proposition conveyed by ϕ, namely $(\forall x{:}\ X)(\lambda x.p(x))$. Nonetheless, one may use ϕ hyperbolically. Suppose q predicates $\lambda x.p$ of x: $x \in Y$: $Y \subset X$. If $\lambda x.p$ is only true of x: $x \in Y$, to say ϕ is to convey a proposition entailing the true and meaningful proposition q. In this case ϕ is not true (the proposition it conveys is not true) and the speaker is violating the maxim of quality without the intent to implicate anything thereby. The speaker is being uncooperative, but not terribly uncooperative so long as q entails r for most r predicating $\lambda x.p$ of x: $x \in Z$: $Z \subset X$. In any case, exaggeration, a partially cooperative use of language, is empirically commonplace.

It is also commonplace that exaggeration is not always recognizable as such. This being so and being mutually known to be so, the speaker cannot be assured that any proposition which one could infer is an exaggeration is not understood as an exaggeration by the hearer. Every possible exaggeration thus carries an implicit hedge. The effect of amount relatives is to disavow the implicit hedge which accompanies all universal noun phrases.

This explanation of the distribution of amount relatives predicts that their acceptability will vary with the likelihood that a noun phrase may be used hyperbolically. They should be most acceptable with universals, least acceptable with existentials, and they should have an intermediate degree of acceptability with near universals and the like. This prediction is born out, as (63) shows.[8]

(63) a. Most dogs there are like a rawhide bone.

b. ?Half the dogs there are like a rawhide bone.

c. *Many dogs there are like a rawhide bone.

All negative polarity items may serve a function precisely analogous to that of amount relatives (whether all of them always do will be debated further below). Consider,

(64) a. I don't have any money.

b. I don't have a red cent.

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[8] This is not the whole story. Consider the following pair of examples based on a pair suggested to me by Jean-Pierre Koenig.

(i) ?Many poets in existence have never written a poem in verse.

(ii) Few poets in existence have never written a poem in verse.

I think this pattern of acceptability derives from the negative polarity context. Example (ii) is equivalent to (iii), which replaces *few* with an approximative-adverb-modified universal.

(iii) Almost no poets in existence have never written a poem in verse.

(65) a. I wouldn't do that.

b. I wouldn't do that for all the tea in China.

It would not be unusual, nor fully cooperative, to utter (64)a when one merely had very little money. If one asserts that one does not have even the smallest unit of money, therefore, one rules out this possibility. Hence, (64)b conveys a stronger proposition. Similarly, it would not be unusual to utter (65)a even though some incentive might bring one to perform the act in question. (65)b makes a stronger statement because all the tea in China is meant to be an excessively large incentive: if all the tea in China is not a sufficient incentive, then no incentive is sufficient. There is a tacit hedge in (65)a which makes it an acceptable assertion in a superset of the contexts in which (65)b would be acceptable.

Conversely, in positive polarity contexts these negative polarity items fail to be informative.

(66) a. I have some money.

b.*I have a red cent.

c.?I have one red cent.

(67) a. I would do that.

b.?I would do that for all the tea in China.

To say (66)a is to entail (66)b, since a red cent, being the minimum unit of currency, is contained in any amount of money one might have. One might use (66)c, therefore, to implicate a hedged version of (64)a via the maxim of quantity (I omit the reasoning as I assume it is familiar to the reader). This interpretation makes (66)c and (67)b partially acceptable. They still involve a violation of the maxim of manner — why say *one red cent* when for all practical purposes this is the same as *none*? —, so they are not fully acceptable. I will not discuss the factors blocking such an interpretation of (66)b, but I

refer the interested reader to Israel (1996). What is important for our purposes is to notice the parallelism between amount relatives and these negative polarity items.

This parallelism is relevant because it gives us an explanation for why universals accept negative polarity items in their restriction: the latter strengthen universals by blocking their implicit hedge. As with the amount relatives, this explanation of universal determiners as negative polarity triggers predicts that near universals, too, will be relatively more acceptable as negative polarity triggers than simple existentials. Again, the data bear this out.

(68) a. Most dogs that <u>ever</u> try them like rawhide bones.[9]

b. ?Half the dogs that <u>ever</u> try them like rawhide bones.

c. *Many dogs that <u>ever</u> try them like rawhide bones.

This explanation of the distribution of amount relatives and the triggering of negative polarity items by universals relies on the exceptionlessness of universal propositions. Universal assertions regarding individuals of type *X* must hold without exception. This makes them potential instances of exaggeration. Existential assertions regarding individuals of type *X* may be true even though they are false of almost all individuals of type *X*. This makes them exempt from suspicion as instances of exaggeration. Near universals allow few generalizations; thus they are also suspect as instances of exaggeration; thus they allow amount relatives and may trigger negative polarity items. If this explanation is correct, then FC *any* must allow few or no exceptions.

The remaining test for universals is the approximative adverbs *almost*, *nearly*, *absolutely*, *precisely*, *practically*, *hardly*, and so forth. This test differs from the

[9] Literally, *most* means "more than half", so the contrast between (68)a and b is somewhat unexpected. I think the explanation for this is that speakers use *most* to mean "considerably more than half". If a salesman told me, "Most people who try our product like it," and I later learned that 5,001 out of 10,000 users surveyed said they liked the product, I would feel I had been spoken to dishonestly.

preceding two in that it does not admit near universals, (69)b, and it does admit generalizations over individuals of a particular type to which most such individuals are exceptions, (69)c.

(69) a. Almost every dog likes rawhide bones.

b.* Almost most dogs like rawhide bones.

c. Almost 100 dogs like rawhide bones.

Numerous individuals have studied the semantics of approximative adverbs (Dahl, 1970; Horn, 1972; Lakoff, 1972; Carlson, 1981; Hoeksema, 1983; *inter alia*). These adverbs are by no means identical. *Absolutely*, for instance, may modify strong scalar predicates as well as universals — *I absolutely love/loathe escargot* versus **I almost/nearly/precisely love/loath escargot*. *Almost* may modify precisely quantified noun phrases, regardless of whether they are universal — *almost half* versus **absolutely half*. *Nearly*, *precisely*, and *hardly* cannot modify noun phrases with empty extensions — **nearly/precisely/hardly no one* versus *almost/absolutely no one*. *Precisely* can modify precisely quantified noun phrases but not universals — *precisely half* versus **precisely every/all*. By the possibility of modifying them with various approximative adverbs it would appear that FC *any* is a universal quantifier.

(70) a. Almost anyone knows that.

b.* Precisely anyone knows that.

By the same criterion generic noun phrases are not universal.

(71) a.* Almost a cat has a tail.

b.* Almost the cat has a tail.

c.* Almost cats have a tail.

etc.

From these last three arguments and the analysis above of the existential *there* construction we are forced to conclude that FC *any* behaves like the universal determiners in two respects: it presupposes the non-nullity of the extension of its nominal and it describes a generalization that holds without exception. This is all we need to conclude that FC *any* is logically equivalent to the universal quantifier of predicate calculus. This is not all we need to conclude that FC *any* has the same semantics as the universal determiners. Also, by the same three arguments we can reinforce the conclusion that PS *any* should be classified as an existential and not as a universal determiner. PS *any* may occur in the existential *there* construction.

(72) There aren't any irrational prime numbers.

Thus PS *any* does not presuppose the non-nullity of the extension of its nominal. Further, PS *any* cannot take an amount relative, does not trigger negative polarity items, and cannot be modified by *almost* or the other approximative adverbs. (73)a is incompatible with (74). (73)b–d are not.

(73) a. I didn't see anyone.
b. I didn't see anyone there is.
c. I didn't see anyone who'd ever been born.
d. I didn't see almost anyone.

(74) I saw someone.

In fact, all of (73)b–d are paraphrasable as (75).

(75) I didn't see everyone.

The *any* in these sentences is the FC *any*, the wide-scope universal *any*, not PS *any*.

If we must analyze *any*'s semantics in terms of the universal and existential quantifiers of predicate calculus, all arguments force us to conclude that we must analyze

FC *any* as universal and PS *any* as existential. However, we need not analyze *any* in the terms of predicate calculus. In the next section I will provide a monosemous choice functional rational implicature account of *any*.

6.3 A REVIEW OF THE FACTS

The following overview is fairly but not completely exhaustive. For more thorough descriptions of the contexts conditioning the occurrence of *any* see Linebarger (1980a,b; 1987), Kadmon & Landman (1993), Israel (1996). I have used small capitals to indicate words that will be used as category labels.

I. *Any* is excluded from certain contexts.

a. EXTENSIONAL CONTEXTS — descriptions of specific situations

(76) a.*Anyone came by to see you at noon.

b.*Bob failed to look both ways as he exited the private drive and he ran into anyone's car.

c.*All the boys came with any money.

b. STRONG EPISTEMIC MODALITY[10], perhaps excepting that which describes a (temporary) habit, propensity, or type.

(77) a.*Anybody must be the killer.

b.*Anything must happen.

c. Lord! You must have drunk anything anybody put in your hand last night!

d.?If this carapace means what I think it does, any silver-winged mung fly must have five legs!

c. The subject of NEGATED PREDICATES.

(78) a.*Anybody might not say that.

b.*Any cat doesn't hunt emus.

c.*Anybody doesn't like kohlrabi chutney.

II. *Any* behaves like an ordinary existential in the following polarity contexts. The test for existentiality in the examples below is the exclusion of *absolutely* as a modifier of the *any* noun phrase or the change in sense of the noun phrase with the inclusion of *absolutely*.

a. The scope of overt NEGATION

(79) a. I <u>didn't</u> see anyone.

b. Ellen <u>didn't</u> come with anyone.

c. I <u>don't</u> think anyone saw you.

[10] Strong epistemic modality concerns certainty of knowledge — "This must be true. All evidence leads to this conclusion" — as opposed to obligation — "This must happen. If it does not I will be greatly displeased."

b. Questions

(80) a. Did you see anyone?

b. Will anyone want to see our passports?

c. Who said anything about sightseeing in Kosovo?

d. Who here knows anything about diesel engines?

c. In sentences of IMPERATIVE form, which necessarily have the force of a suggestion when *any* is present.

(81) a. Order any dessert from the dessert cart.

b. Pick any number less than 1,000,000 — I can tell you whether or not it is prime.

d. The antecedent of a CONDITIONAL (the *absolutely* test doesn't work in this case, but the same test using *almost* does).

(82) a. If anyone asks, say we're from Switzerland

b. If find anything out of the ordinary, stop what you are doing and leave.

c. If you step on anything crunchy, hold still and ask quietly for assistance.

e. The scope of implicit negation

(83) a. Harry left <u>without</u> any money.

b. Lou <u>denies</u> that he spoke to anyone about your talk.

c. It's best we leave quickly <u>lest</u> anyone become curious about our purpose being here.

f. The scope of quasi-NEGATIVE ADVERBS such as *seldom*, *rarely*, and *hardly*.

(84) a. I seldom saw anyone in the park..

b. I rarely drink anything alcoholic.

c. Hardly anyone wears rainbow suspenders anymore.

g. Outside the scope of *ONLY*.[11]

(85) a. Only Imelda knows anything about those purchases.

b. Only Frank saw anyone on the porch just now.

c. Only Chris has any reason to doubt our story.

h. In a clause subordinated by the adverbs *before* and *long after*

(86) a. Clarence cleaned up the mess <u>before</u> anyone saw what he had done.

b. <u>Long after</u> anyone who had read of his exploits had died, Yurgis still was a hero in his own mind.

i. A restrictive relative clause or prepositional phrase modifying a UNIVERSAL noun phrase.

(87) a. Everyone <u>who knows anything about computers</u> knows not to immerse them in brine.

b. Everyone <u>with any sense</u> will leave Ephraim alone today.

c. Everyone acquainted in any way with the prime minister is suspect.

---

[11] It is said that negative polarity items, including *any*, may also occur inside the scope of *only*. I myself find it rather difficult to construct examples with *any* which I judge to be fully acceptable. (i) is a possible example.

(i) Only <u>actors who know **anything** about Shakespeare beyond the outline of an introductory undergraduate survey</u> may audition for the part.

I am not including this context in my survey, however. I am afraid I cannot characterize it sufficiently to say anything convincing about it given my difficulty in finding acceptable examples. Also, I have the intuition that examples such as (i) do not illustrate that *only* licenses *any* in its focus; but rather they illustrate a marginal variety of aphoristic generic. In that case *any* would be licensed in a restrictive relative modifying a quasi-universal. Another example along the same lines is (ii).

(ii) A person <u>who has **any** respect for go</u> doesn't suggest that it be played with M&Ms.

For discussion of aphoristic generics, see § 3.2.5. For a more thorough discussion of *any* inside and outside the scope of *only*, see Horn (to appear).

j. The complement of adversative predicates

(88) a. I dread seeing anyone at the store.

b. I'm sorry you saw anyone.

e. I fear seeing anyone.

f. I'm surprised you saw anyone.

k. With emphasis in the complement of anti-adversative, APPRECIATIVE PREDICATES

(89) a. I'm glad ANYONE looked at my poster.

b. I'm happy ANY trees remain standing on the banks of the river.

c. I'm pleased that ANYBODY deigned to accept one of my pamphlets.

l. GERUNDS and infinitival phrases

(90) a. Knowing anything about the prime minister is grounds for arrest.

b. To ask anybody about the prime minister is to ask for trouble.

III. *Any* behaves like a universal determiner in any context in which an existential noun phrase may have a GENERIC interpretation. The test for universality in the examples below is the acceptance of *absolutely* as a modifier of the *any* noun phrase without any change in truth conditions.

a. With any MODAL aside from strong epistemic modality.

(91) a. Any student can get an A.

b. Any student may get an A.

c. Any student might get an A.

d. ?Any student should get an A.

e. ?Any student must get an A in this course to graduate.

f. *Any student must have gotten an A.

b. With the simple present and past tenses, provided there is a certain degree of emphasis in the generic assertion.

(92) a. ANY owl hunts mice.

b. ANY OWL hunts mice.

c. ANY owl HUNTS mice.

d. ANY owl hunts MICE.

e. Dr. Schumacher saw ANYONE back in those days.

etc.

c. Most contexts in which *any* is also acceptable with an existential interpretation

(93) a. I didn't see absolutely anyone.

b. Who here knows absolutely anything about diesel engines?

c. If you step on almost anything crunchy, hold still and ask quietly for assistance.

d. Lou denies that he spoke to absolutely anyone about your talk.

e. ?I rarely drink almost anything alcoholic.

f. Only Imelda knows absolutely anything about those purchases.

g. Everyone who knows absolutely anything about computers knows not to immerse them in brine.

h. I'm sorry you saw absolutely anyone.

i. ?I'm glad absolutely ANYONE looked at my poster.

j. ?Knowing absolutely anything about the prime minister is grounds for arrest.

d. When modified by a RESTRICTIVE RELATIVE clause or prepositional phrase

(94) Anybody with a question about dogs is waiting in the next room.

e. In standards of comparison[12]

(95) a. Billy is faster than a cheetah.

b. Billy is faster than anyone.

c. Billy is as fast as anyone.

d. Billy is the fastest person that anyone has ever seen.

IV. Additional peculiarities of *any*.

a. There is some sort of locality condition governing when an operator may license *any*.

(96) a. I did not see anyone.

b.* Anyone wasn't seen by me.

b. Contexts that license *any* are usually downward entailing[13].

(97) a. I did not see <u>a woman</u> at the store. → I did not see <u>Jane</u> at the store.

b. This cheetah is faster than <u>a horse</u>. → This cheetah is faster than <u>Old Paint</u>.

c. Lauren left before the <u>Joneses</u>. → Lauren left before <u>Mr. Jones</u>.

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[12] Standards of comparison are normally considered to be negative polarity contexts, since they accept negative polarity items (other than *any*), as witnessed by the presence of *ever* in (95)d. Ordinary generics also occur in standards of comparison, where they have a force largely equivalent to that of *any* noun phrases, as witnessed by (95)a. Since *any* may be modified by approximative adverbs in standards of comparison without any perceptible change in sense, I have listed this category as one that accepts FC *any*.

[13] Suppose we have a generalized quantifier Q and sets A, B, $C \subseteq A$, $D \subseteq B$. Q is downward entailing on its restriction if $QAB \rightarrow QCB$. It is downward entailing on its nuclear scope if $QAB \rightarrow QAD$. More generally, a particular context $\lambda X.P$ is downward entailing if when it may be truthfully applied to X it may also be truthfully applied to any $Y \subset X$. The notion of downward entailment is developed at length in Ladusaw (1979).

c. FC *any* behaves like a generic and unlike a universal in that it cannot be contextually restricted.

(34) a. Come to the party tonight. Everyone will wear a silk hat. ≠

a'. Come to the party tonight. #Everyone in existence will wear a silk hat.

b. I like this company. Everyone works hard and takes pride in what they do. ≠

b'. I like this company. #Everyone in existence works hard and takes pride in what they do.

(35) a. Come to the party tonight. #Anyone/A (generic) person will wear a silk hat. =

a'. Come to the party tonight. #Every (ordinary) person in existence will wear a silk hat.

b. I like this company. #Anyone/A (generic) person works hard and takes pride in what they do. =

b'. I like this company. #Every (ordinary) person in existence works hard and takes pride in what they do.

d. FC *any* describes dispositional rather than habitual generalizations (the first examples in (98) and (99) are adapted from Carlson, 1981).

(98) Bob eats spinach. =

a. Bob habitually/commonly/customarily/frequently eats spinach.

b. Bob is willing/able to eat spinach.

(99) a. Bob eats anything. =

a'. Bob is willing/able to eat anything.

b. This solvent dissolves anything. =

b'. This solvent is capable of dissolving anything.

e. PS *any* in questions conveys a politeness that other existentials do not.

(100) a. Can I get you anything?

b. Can I get you something?

f. FC *any* sometimes does and sometimes does not imply[14] the non-nullity of the extension of its nominal.

(101) There may be no man with a question about a dog, but

a. ?the man with a question about a dog is in the next room.

b. ?some man with a question about a dog is in the next room.

c. ?a man with a question about a dog is in the next room.

d. ?a certain man with a question about a dog is in the next room.

e. any man with a question about a dog is in the next room.

(102) a. A hairless bear sleeps in a deep den.[15] [16]

b. ?Any hairless bear sleeps in a deep den.

6.3.1 Some simplifying generalizations

From this overview we may extract at least three simplifying generalizations which together describe every context of use or prohibition of *any* noun phrases. First of all, *any* never has specific reference; an *any* noun phrase can never refer to a particular individual that the speaker has in mind. This prohibition suggests an explanation for the absence of *any* from contexts I.a and I.b, extensional contexts and contexts of strong epistemic modality. Except when it is used to characterize a habit, propensity, or type, strong

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[14] It would be difficult to test whether any such implication was a presupposition of *any*, since the tests for that all involve contexts to which *any* is independently sensitive.

[15] I assume there are no hairless bears.

[16] One might suggest that a further difference between (101)e and (102)a is that the first involves an aphoristic generic and the second an ordinary generic. However this may be, it cannot be an explanation of

epistemic modality always expresses certainty of knowledge regarding a specific event. Second, many of the contexts which accept *any* are irrealis — the *any* noun phrase is not used to describe an actual situation but a hypothetical one, the way the world might be or how one could conceive of the world as being[17]. Such irrealis contexts include II.a, negation, II.b, questions, II.c, imperatives, II.d, conditionals, II.e, implicit negation, II.h, subordination by *before*, and III.a, modals. They also include II.l, gerunds, and III.d, restrictive relatives, inasmuch as these denote types of events or individuals rather than actual events or individuals. This generalization arguably applies to other contexts as well, but it at least applies to these listed. Third and finally, for many contexts accepting *any*, there is a paraphrase of the sentence in which *any* N' is replaced either by *a* N'*even the most/least remarkable* or by *even the most/least remarkable* N'; and for all contexts accepting *any* there is at least a rough paraphrase of this form. Let us call this the existential-*even* paraphrase. Since this third generalization is the basis of most recent univocal analyses of *any* (Krifka, 1990a,b; Kadmon & Landman, 1993; Lee & Horn, 1994; Israel, 1996) and other recent analyses are largely intertranslatable with the existential-*even* analysis (Rullman, 1996; Horn, to appear), I will examine it now in somewhat greater detail.

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the difference in the (non)implication of the non-nullity of the restriction, since aphoristic generics do not differ in their universalizing mechanism from indefinite generics.

[17] Zwarts (1995) has sought to define this irreality more precisely as nonveridicality: a propositional operator O is nonveridical if $O(p) \not\rightarrow p$. Zwarts argues that *any* occurs only in the scope of nonveridical operators. This is not a necessary condition for the occurrence of *any*, however. Note, for example, that *any* may occur in the scope of such veridical operators as verbs of negative propositional attitudes.

(i) a. I'm sorry I said anything.
b. I'm sorry I saw Marjorie.
c. I saw Marjorie.

The complement of a negative propositional attitude verb such as this is veridical, as is shown by the pattern of entailment: (i)b → (i)c. Nonetheless, *any* is acceptable in this context, as is shown by (i)a.

The essential observations of existential-*even* analyses of *any* are the following[18]. Let us call the propositional content of a proposition the text proposition (tp). A sentence containing *even* conventionally implicates that there is are other propositions, call them context propositions (cp), which the speaker believes the hearer would also regard as informative and which are unilaterally implicated by the tp. To assert a sentence containing *even*, therefore, is to evoke a complex of less informative propositions and to conventionally implicate that these propositions also hold. To illustrate, (103) has tp (104) and cp (105).

(103) Even Carl knows that.

(104) tp: Carl knows that.

(105) cp: Heinrik knows that.
Maurine knows that.
Esa knows that.
Paula knows that.
…

If *even* modifies a superlative noun phase, the tp implies that the same predication holds for all individuals describable by the adjective at all: the sentence is logically equivalent to a universal generalization. Thus, if I say (106)a this conventionally implicates (106)b.

(106) a. Even the shortest giraffe is taller than a shrew.
b. All giraffes are taller than a shrew.

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[18] This discussion reflects the analysis of *even* represented in Horn (1969, 1971), Fauconnier (1975b), Karttunen & Peters (1979), and Kay (1990), *inter alia*. For perspicuous descriptions of the application of these ideas in the existential-*even* analysis, I refer the reader to Lee & Horn (1994) and Israel (1996).

Since the similarity between the universal quantifier of predicate logic and *any* is well established, it is not difficult to see how analyzing *any* as an existential containing in addition the sense of *even* could account for most of the facts. Furthermore, it is easy to test the effectiveness of the existential-*even* analysis: if the existential-*even* paraphrase has the same distribution as *any* and it truly does paraphrase *any* in all contexts, then *any* must have the same semantics as the paraphrase. Let us perform this test on the contexts listed above. I will use '=' to indicate equivalence and '≈' to indicate near equivalence. The basis for this distinction is intuition. The intuition in most cases is that the existential-*even* paraphrase is emphatic whereas the sentence with *any* is not. An explanation will be given in § 6.3.1.1.

II.a. The scope of overt NEGATION

(107) a. I didn't see anyone. ≈

b. I didn't see even the least remarkable person.[19]

II.b. Questions

(108) a. Did you see anyone? ≈

b. Did you see even the least remarkable person?

II.c. In sentences of IMPERATIVE form

(109) a. Order any dessert from the dessert cart. =

b. Order even the most remarkable dessert from the dessert cart.

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[19] In many cases a more natural sounding existential-*even* paraphrase of PS *any* is *even a single*. Lee & Horn (1994) actually posit that PS *any* must be so paraphrased. I find my *even the least remarkable* paraphrase to be reasonably natural, however; and in § 6.3.1.1 I will provide some arguments that Lee & Horn's paraphrase with *single* cannot be the paraphrase of PS *any*. Be this as it may, I seek to provide a consistent existential-*even* paraphrase for all *any*'s so as to provide the most general existential-*even* analysis for purposes of comparison.

II.d. The antecedent of a CONDITIONAL

(110) a. If anyone asks, say we're from Switzerland. ≈

b. If even the least/most remarkable person asks, say we're from Switzerland.

II.e. The scope of IMPLICIT NEGATION

(111) a. Harry left without any money. ≈

b. Harry left without even the least remarkable amount of money.

II.f. The scope of quasi-NEGATIVE ADVERBS such as *seldom*, *rarely*, and *hardly*.

(112) a. I seldom saw anyone in the park. ≈

b. I seldom saw even the least remarkable person in the park.

II.g. Outside the scope of *ONLY*.

(113) a. Only Imelda knows anything about those purchases. ≈

b. Only Imelda knows even the least remarkable thing about those purchases.

II.h. In a clause subordinated by the adverbs *BEFORE* and *long after*

(114) a. Clarence cleaned up the mess before anyone saw what he had done. ≈

b. Clarence cleaned up the mess before even the least remarkable person saw what he had done.

II.i. A restrictive relative clause modifying a UNIVERSAL noun phrase.

(115) a. Everyone with any sense will leave Ephraim alone today. =

b. Everyone with even the least remarkable amount of sense will leave Ephraim alone today.

II.j. The complement of ADVERSATIVE PREDICATES

(116) a. I dread seeing anyone at the store. ≈

b. I dread seeing even the least remarkable person at the store.

II.k. With emphasis in the complement of APPRECIATIVE PREDICATES

(117) a. I'm glad ANYONE looked at my poster. =

b. I'm glad EVEN THE LEAST REMARKABLE PERSON looked at my poster.

II.l. GERUNDS and infinitival phrases

(118) a. Knowing anything about the prime minister is grounds for arrest. =

b. Knowing even the least remarkable thing about the prime minister is grounds for arrest.

III.a. With any MODAL aside from strong epistemic modality

(119) a. Any student can get an A. =

b. Even the least remarkable student can get an A.

III.b. With the simple present and past tenses

(120) a. Any owl hunts mice. =

b. Even the least/most remarkable owl hunts mice.

III.d. When modified by a RESTRICTIVE RELATIVE clause

(121) a. Anybody with a question about dogs is waiting in the next room. ≈

b. Even the least/most remarkable person with a question about dogs is waiting in the next room.

III.e. In standards of comparison

(122) a. Billy is faster than anyone. =

b. Billy is faster than even the most remarkable person.

I will not reexamine every point made in our investigation of *any* above, but note that this quasi-universal analysis of *any* avoids some of the flaws inherent in the predicate logic universal analysis. In particular, we no longer have an undesirable interpretation of imperatives. (109)b, like (109)a, has the force of a suggestion rather than a command, and it is a suggestion to order any one dessert, not all desserts. I will not consider why this should be so, but it is so. The locality restriction, however it works, also seems to work for the existential-*even* paraphrase.

(123) a.*Anyone wasn't seen by me.

b.*A person, even the least remarkable, wasn't seen by me.

We may account for the PS/FC ambiguity as well. For example, (124)a has the existential-*even* paraphrase (124)b; and if the negation is interpreted metalinguistically, it can be paraphrased as (124)c.

(124) a. I did not see anyone.

b. I did not see even the least remarkable person.

c. It is not the case that I saw even the least remarkable person.

(124)b is equivalent to "I saw no one", the PS interpretation. (124)c is equivalent to "I didn't see everyone", the FC interpretation.

This explanation of PS/FC ambiguity requires that FC *any* occur in ambiguous contexts only when the polarity operator is understood to be metalinguistic. In fact, I believe the FC interpretation is available only when *any* carries one of the intonational contours characteristic of metalinguistic use: a constant and positive or constant and

negative rate of change in the rate of change in pitch[20]. (125) is meant to establish that in fact these are the only metalinguistic intonational contours; (126) and (127), that FC *any* in NP contexts must have one of these contours. (125)a illustrates possible non-metalinguistic contours. (125)b illustrates metalinguistic intonational contours. (125)c,d illustrate impossible metalinguistic contours.

(125) a. Nō./N ./N ?/N ?! /No.[21]

b. I asked you to grâte the cheese, not to răte it.

c.*I asked you to $\left\{\begin{array}{l}\text{grăte the cheese, not to râte}\\ \text{grăte the cheese, not to răte}\\ \text{grâte the cheese, not to râte}\end{array}\right\}$ it.

d.*I asked you to grāte/gr te/gr te/gr te/grate the cheese, not to rāte/r te/r te/r te/rate it.

(126) a. I didn't see $\left\{\begin{array}{l}\text{ănyone}\\ \text{just ănyone}\\ \text{absolutely ănyone}\end{array}\right\}$. (= 'I didn't see everyone.')

b. ?I didn't see ányone/anyone.

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[20] Mid rising and mid falling tones, respectively, in the account of Houghton (1996b). In the following examples the diacritic representations of pitch I use correspond roughly to the image one would obtain were one to graph the fundamental frequency over the syllable in question in Hertz or octaves/second. The phonetic facts regarding metalinguistic negation are considerably more complicated than I present them as being here. These examples are meant only to demonstrate the nature of the intuitive observation that FC *any* in PS contexts is marked with metalinguistic intonation.

[21] The diacritical marks roughly correspond to a graph of pitch. The following are rough descriptions of contexts in which each of these intonational contours would be appropriate:

macron *no*: a "list" denial — '<u>No</u>. <u>No</u>. Yes. <u>No</u>. Yes…';
grave *no*: a "flat" denial — '<u>No</u>, not in the least.';
acute *no*: echoic denial or tag denial — '<u>No</u>? I really thought you did.' or 'You did this, <u>no</u>?';
tilde *no*: incredulous echoic denial — '<u>No</u>?! What do you mean, no?!';
and reverse tilde *no*: patronizing or "motherese" denial — 'Not the blue bear. <u>No</u>. Not the blue bear. The red bear! Yes! Good girl! The red bear!'.

The two *no*'s not represented in this list are:

circumflex *no*: sharp denial — '<u>No</u>! You absolutely may not!';
and hacek *no*: encouraging denial — '<u>No</u>… <u>No</u>… <u>No</u>… Right!'

c.*I didn't see ãnyone.

d. I didn't see â̄nyone/ā̄nyone/ nyone . (= 'I saw no one.')

e.*I didn't see just/absolutely â̄nyone/ā̄nyone/ nyone/ nyone/ nyone/anyone .

(127) a. If {ă̄nyone/â̄nyone / just ă̄nyone/â̄nyone / absolutely ă̄nyone/â̄nyone} can do it, … (= 'If everyone can do it, …')

b. If ā̄nyone/ nyone/ nyone/etc. can do it, … (= 'If there exists a person who …')

c.*If just/absolutely ā̄nyone/ nyone/ nyone/etc. can do it, …

The non-occurrence of *any* in the prohibited contexts (I) also seems to follow from the existential-*even* account.

I.a. EXTENSIONAL CONTEXTS

(128) a.*Anyone came by to see you at noon.

b.*Even the least remarkable person came by to see you at noon.

I.b. STRONG EPISTEMIC MODALITY

(129) a.*Anybody must be the killer.

b.*Even the least remarkable person must be the killer.

I.c. The subject of NEGATED PREDICATES

(130) a.*Anybody might not say that.

b.*Even the least remarkable person might not say that.

I refer the reader to the works cited (Krifka, 1990a,b; Kadmon & Landman, 1993; Lee & Horn, 1994; Israel, 1996) for those arguments, as well as arguments concerning downward entailment. I will now turn to the flaws in the existential-*even* account.

6.3.1.1 reasons to doubt the existential-*even* account

One problem with the existential-*even* account of *any* is that it is not clear that it predicts the impossibility of contextually restricting FC *any*. If we use the generic existential-*even* paraphrase I have been using throughout this section, we find that the paraphrase behaves like an ordinary universal noun phrase and unlike an *any* noun phrase.

(131) Come to the party tonight.

a. Everyone will wear a silk hat. ≠ (132)

b. ?Anyone will wear a silk hat. = (132)

c. Even the least remarkable person will wear a silk hat. ≠ (132)

(132) Come to the party tonight. ?Everyone in existence will wear a silk hat.

It is difficult to evaluate particular existential-*even* accounts on this issue, because I don't know of one that addresses it. This cannot prove a fatal flaw, however. All existential-*even* accounts draw inspiration from the quasi-genericity of FC *any* and endorse existential-*even* paraphrases more along the lines of *an x, even the least/most remarkable*, which would confer on the paraphrase the indefinite generic's eschewal of contextual restrictions. It is not clear, however, that this explanation will be adequate, since, as I shall argue in § 6.4 below, indefinite generics are more accepting of contextual restrictions than *any* is and it is not obvious that the existential-*even* account predicts such a difference.

Another problem with the existential-*even* account is that it does not clearly predict when an *any* noun phrase will imply the non-nullity of the extension of its nominal. Consider just the two cases cited in (101) and (102), restated here as (133) and (134).

(133) There may be no man with a question about a dog, but

a. ?a man with a question about a dog is in the next room.

b. any man with a question about a dog is in the next room.

c. ?even the least remarkable man with a question about a dog is in the next room.

(134) a. A hairless bear sleeps in a deep den.

b. ?Any hairless bear sleeps in a deep den.

c. ?Even the least remarkable hairless bear sleeps in a deep den.

The existential-*even* paraphrase, like universal noun phrases, definite noun phrases, and ordinary generics, implies the non-nullity of the extension of its nominal: to say something regarding the least remarkable *X* is to imply that one believes there is some *X*. In contexts in which this presupposition is suspended, (133), or improbable, (134), these noun phrases sound odd at best. *Any* NPs, however, do not necessarily imply the non-nullity of the extensions of their nominals, (133)b. This is a case in which *any* does not pattern with the indefinite article, so no simple rephrasing of the existential-*even* paraphrase will solve our problem. Again, I do not know of a particular existential-*even* account which addresses this issue.

There are two other phenomena mentioned by Lee & Horn (1994) which might give one pause in accepting the existential-*even* analysis. The first is that *whatsoever* and *at all* can modify all uses of *any* but no existential-*even* paraphrase.

(135) a. I didn't see anyone whatsoever/at all. [PS *any*]

b. Anyone at all/whatsoever could tell you that. [FC *any*]

(136) a.*I didn't see even a single/the least remarkable person whatsoever/at all.

b.*Even the least remarkable person whatsoever/at all could tell you that.

The second problematic phenomenon is that approximative adverbs cannot modify existential-*even* paraphrases.

(137) a. Almost anyone could tell you that.

b.* Almost even the least remarkable person could tell you that.

However, a proponent of the existential-*even* analysis could appeal to an independent constraint to explain these discrepancies. In general, a focus cannot be associated with more than one focus particle.

(138) *Even Barry, too, likes cocoa with marshmallows.

Even is a focus particle and both the intensifier *at all* and the approximative adverbs bear a strong resemblance to focus particles.[22] They can modify a similar range of constituent types.

(139) a. Even BARRY hates prunewhip.

b. Even BARRY'S grandmother hates prunewhip.

c. Barry even EATS prunewhip.

d. Barry will do anything. He even EATS PRUNEWHIP.

e. Anything might happen. The world might even end.

(140) a. I don't see ANYONE at all.

b. I don't BELIEVE at all what you say.

c. I don't KNOW WHAT YOU MEAN at all.

(141) a. Almost HALF the students came.

b. Almost HALF THE STUDENTS came.

c. Half the students almost HIT Mr. Farbanes.

d. Half the students almost LOST THEIR LUNCH.

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[22] *Whatsoever* remains something of a problem. I have not found an instance of this expression which does not modify either an *any* NP or a *no* NP aside from a few cases in which it is used as an independent pronoun.

e. It was an exciting day. Half the students lost their lunch, almost.

And if they are associated with a constituent which does not bear intonational focus they are infelicitous. The sentences in (142) are felicitous only if the accent is understood as metalinguistic.

(142) a. ?Even Barry HATES prunewhip.

b. ?I don't SEE anyone at all.

c. ?Almost half the students CAME.

We may therefore attribute these discrepancies between the existential-*even* paraphrase and *any* to a constraint against associating more than one focus particle to a single focus. The existential-*even* analysis does not require that *any* incorporate a focus particle, only that it incorporate the scalar semantics of *even*. *Any* does not provide a focus particle to compete with other focus particles; the existential-*even* paraphrase does.

Rullman (1996) provides a further piece of evidence that there are at least complications to the existential-*even* analysis: *even* can occur with minimizer NPIs and quantity expressions but *any* cannot.

(143) a. Camille didn't eat even a single bite.

b.* Camille didn't eat any single bite.

(144) a. Camille won't last even a minute in that free-for-all.

b.* Camille won't last any minute in that free-for-all.

These observations create considerable difficulties for the existential-*even* analysis of Lee & Horn (1994), according to which PS *any* is always paraphrasable as *even a single*. If we constrain the paraphrase always to include a superlative, however, the paraphrase, too, rejects minimizer NPIs and quantity expressions.

(145) a.*Camille didn't eat even the least remarkable single bite.

b.*Camille won't last even the least remarkable minute in that free-for-all.

Lee & Horn differentiated the two different existential-*even* paraphrases, that involving an indefinite article and an expression of quantity and that involving a superlative, as invoking scales of quantity and scales of kind, respectively. If only the paraphrase involving a superlative is allowed, this suggests the existential-*even* paraphrase cannot involve a quantity scale but must always involve a scale ranking individuals of some sort under different descriptions.

Whether or not an existential-*even* account of *any* could sidestep the problems I have just cited, there is another which all acknowledge and which I believe is insurmountable. The problem is that all existential-*even* accounts require *any* to be emphatic though in certain uses it clearly is not. In what follows I will first provide a cursory account of emphasis and then examine the problems this account creates for the existential-*even* analysis.

In all cases that I have seen in which the problem of the unemphaticness of *any* relative to existential-*even* paraphrases has been mentioned, the nature of the central notion, emphasis, has been left largely unexamined. I will examine emphasis briefly. A more detailed examination along the same lines can be found in Houghton (1996a).

In the examples below, the (a) sentences are all intuitively less emphatic than the rest. I will take this as an established fact and attempt to explain it.

(146) a. Who told you that?

b. Who in the world told you THAT?

c. Who TOLD you that?

d. For chrissake, who told you that?!

(147) a. Come over to my place after work.

b. Please come over to my place after work!

c. I'm telling you, come over to my place after work.

d. Listen — come OVER to MY place after WORK!

(148) a. Farley's dog chased the Simpsons' cats up a tree.

b. Farley's DOG chased the Simpsons' CATS up a TREE!

c. Farley's dog chased all the Simpsons' cats, every one, right up a tree!

d. Farley's dog indeed did chase the Simpsons' cats up a tree.

One fact to be observed is that any speech act can be more or less emphatic. Also, compare (148)a to b–d. The assertions in (148) all have the same truth conditions. These two facts suggests that a general definition of emphasis will refer not to truth- but to felicity conditions in the sense of Searle (1969). One commonality among the emphatic examples in (146)–(148) relative to their unemphatic counterparts is that should their hearer refuse to respond cooperatively this would be seen as more than usually uncooperative; should they be uttered uncooperatively, when their felicity conditions did not hold, this would be seen as more than usually uncooperative on the part of the speaker. Emphasis places a greater than usual burden on the participants in the speech act to make sure they perform their respective roles felicitously. I suggest that this is the single essential element in all instances of emphasis: a social sanction enforcing communicative cooperation is invoked which is greater than some understood norm.[23]

If this is indeed the essential nature of emphasis, it has interesting ramifications for propositions involving probability scales. An example is (149).

(149) Even Henry can leap this creek.

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[23] In Searle & Vanderveken (1985) this notion of emphasis would correspond to a high degree of illocutionary strength.

Given the semantics which is generally assumed for *even*, (149) says that Henry can leap the creek, it conventionally implicates that there is a scale of probability among individuals who might be able to leap the creek on which Henry ranks near or at the bottom, and this scale and the entailments of (149) implicate that everyone ranked higher than Henry on this scale can also leap the creek. Because it is by implication unlikely that Henry can leap the creek, it is correspondingly unlikely that the felicity conditions of (149) hold — that (149) is true. This means that it takes greater than usual trust on the hearer's part to accept (149) as true. In general, one does not wish to take risks; the greater the risk, the less one wishes to accept it. If the risk is that someone else will fail to perform some action, it is lessened to the extent that the other is motivated not to fail: failure must bring upon the other some sanction. In the case of speech among individuals, the sanction which ensures fair dealing is a social sanction, the suspension of cooperation by one's interlocutors. Because it takes greater than usual trust on the hearer's part to accept (149) as true, by rational implicature (149) invokes a stronger than usual social sanction on the speaker to ensure her honesty. The sanction can only be judged stronger than usual relative to some standard, and (149) provides this standard as well: the sanction required to enforce the alternative assertions one could make by replacing Henry with the other individuals ranked higher than him on the scale. The general point is that *even*, and any expression which may be analyzed as incorporating the semantics of *even*, is necessarily emphatic.

Even always conveys a sense of emphasis, because it indicates that the proposition communicated is stronger than another proposition, the cp, which would still be informative and relevant. In Kadmon & Landman's analysis and that of Israel, emphasis itself is part of the lexical content of *any*; it is essential to predicting the desired pattern of usage. All of these theorists acknowledge, however, that there are uses of *any* which do not carry any sense of emphasis (q.v. Heim, 1984; Rullman, 1996). These are

all the uses whose relation to their existential-*even* paraphrase is marked with the sign for near equivalence, '≈', in the overview above.

Neutral senses may be distinguished from emphatic ones by various means. The most straightforward and least reliable is intuition. This is the "test" generally referred to when the problem of the seeming neutrality of *any* in some contexts is mentioned. It is said that sentences such as (150) have no perceptible emphasis (or, in the terminology of Kadmon & Landman, that there is no perceptible "widening" of sense).

(150) I didn't see anybody.

(150) is the most common way to say "there is no one that I saw". Any other phrasing sounds odd or requires a special context, which is further evidence that (150) should be regarded as neutral and unemphatic. Furthermore, there are variations on (150) that are clearly emphatic.

(151) a. I didn't see ANYBODY.
b. I didn't see anybody at all.
c. I didn't see even the least remarkable person.
d. I saw no one.
e. There was no one to be seen.
f. If there was a person there, he was doing a pretty good job of being invisible.
etc.

These emphatic expressions do not seem to be conventionally ranked by degree of emphasis, as is shown by their interchangeability in apposition. When two expressions denoting different degrees on the same scale, the expression denoting the degree which deviates less from expectation must come first, as (152) illustrates.

(152) a. That man was big — huge.

a'. ?That man was huge — big.

b. The grocer was angry — furious.

b'. ?The grocer was furious — angry.

Compare (152) to (153), in which the emphatic expression are opposed.

(153) a. I didn't see ANYBODY — not anybody at all.

a'. I didn't see anybody at all — not ANYBODY.

b. I didn't see anybody at all — not even the least remarkable person.

b'. I didn't see even the least remarkable person — not anybody at all.

By these same tests *any* ranks as less emphatic (lest *anybody* inadvertently be read without emphatic stress, relatively greater stress should be placed on *see*).

(154) a. I didn't see anybody — not ANYBODY.

a'. ?I didn't see ANYBODY — not anybody.

b. I didn't see anybody — not anybody at all.

b'. ?I didn't see anybody at all — not anybody.

c. I didn't see anybody — not even the least remarkable person.

c'. ?I didn't see even the least remarkable person — not anybody.

The difference between emphatic and neutral readings is brought out more clearly in questions. As noted in Borkin (1971), Linebarger (1980a), Heim (1984), Rullman (1996), Israel (1996), emphatic phrases force a rhetorical reading on a question.

(155) a. Did you lift a finger to help him?

b. Did he budge an inch?

c. Did he so much as crack a smile?

These questions are rhetorical in that, though they are yes/no questions, they render any response of yes or no so uninformative as to be irrelevant. To lift a finger is hardly to do anything at all; to budge an inch is to hardly move; to crack a smile is to hardly respond. A simple yes response to a question in (155) is to say that something was hardly done; a simple no, that it was not done. There is little difference between the two. The rhetorical questions in (155) are in effect biased in favor of a no response.[24] The same can be said for the sentence in (156).

(156) a. Did you see ANYBODY?

b. Did you see anybody at all?

c. Did you see even the least remarkable person?

The neutral form of this yes/no question is just that with unstressed *any*, (157).

(157) Did you see anybody?

Either response to (157), yes or no, would be informative.

Another straightforward piece of evidence that *any* need not be emphatic but the existential-*even* paraphrase must involves the nature of the generalizations each allows one to make. Unstressed *any*, which can only be PS *any*, allows one to make accidental generalizations. Stressed *any* and the existential-*even* paraphrase allow one only to make law-like generalizations. Rullman (1996) illustrates this point with (158) and (159).

(158) a. Everyone who ate anything got sick.

a. Everyone who ate anything was actually wearing blue jeans.

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[24] The hearer may respond to a rhetorical yes/no question as if it were a wh-question, saying what in fact was done rather than simply saying yes or no. The response to the question is then informative, but the rhetorical nature of the question consists in its yes/no form. This form calls for responses which in this case can only be uninformative.

(159) a. Everyone who ate a single bite got sick.

b. ?Everyone who ate a single bite was actually wearing blue jeans.

(159) does not contain the word *even*; rather, it contains the negative polarity expression *a single bite*. If one substitutes *even a bite* for *a single bite*, the same pattern emerges. In fact, the thesis Heim (1984) argues for and Rullman endorses, elaborating the hypothesis of Schmerling (1971), is that negative polarity items may be divided into those which do and those which do not incorporate the semantics of *even*. *A single bite* is in the *even* incorporating group. The only negative polarity items Heim identifies as definitely not incorporating *even* are *any* and *ever*. Heim has a straightforward explanation for why *even*-incorporating NPIs should allow only law-like generalizations. If *a single bite* is equivalent to *even a bite*, (159)a conventionally implicates that there is a scale ranking quantities of food in terms of the probability that they will make the open proposition "everyone who ate *x* got sick" true. One may easily conceive of situation in which such a scale is appropriate — suppose the food is rotten. Thus, (159)a is acceptable. (159)b, on the other hand, requires one to conceive of such a scale for the open proposition "everyone who ate *x* was actually wearing blue jeans". It's hard to conceive of a world in which the quantity of food one eats has a bearing on the probability that one is wearing blue jeans, so (159)b is infelicitous. Whether or not this explanation is correct — I think it is —, this pattern shows that *any* does not always have an existential-*even* paraphrase.

Now why should *even* always be emphatic? The emphasis which accompanies *even* is inherent in the scalarity of the expression it modifies. If the expression does not correspond to something near the extreme of some semantic or pragmatic scale *even* is vacuous and infelicitous; there is no informative cp which may be entailed by the tp.

(160) a. Even the King of France fears death.

b. Even the most exalted person fears death.

c. Even the least remarkable person fears death.

d. ?Even somebody fears death.

For the same reason that *even* is always emphatic, emphasis and scalarity are bound together in the existential-*even* account of *any*. It is emphasis together with scalar extremity that would allow *any* to behave like a universal determiner to the extent that it does: because the tp concerns a scalar extreme and is emphatic, because it implicates a set of cp's which are also true and informative, it implies that the proposition holds for all degrees on the scale. If *any* is indeed neutral in certain contexts, then the existential-*even* hypothesis cannot account for all uses of *any*.

6.3.1.2 conclusion regarding the existential-*even* account of *any*

Given all of the evidence just presented, *any* seems to be truly neutral and unemphatic in certain contexts. In these contexts, it involves no special semantic or pragmatic strengthening. The existential-*even* account predicts that *any* will be emphatic in all contexts. The existential-*even* analysis therefore is not the final analysis of *any*. Since the existential-*even* account is otherwise so successful, however, it stands to reason that it holds part of the truth regarding *any*. In § 6.4 below I will argue that the rational implicature account predicts that *any* noun phrases will have existential-*even* paraphrases in a substantial number of contexts. The rational implicature account will thus inherit most of the explanations and predictions of the existential-*even* account.

6.3.2 the indiscriminative alternative to the existential-*even* account

There is a univocal account of *any* which has been offered as an alternative to the existential-*even* account. On this theory, *any* is literally a free-choice expression: it offers, in Vendler's (1967) terms, "blank warranty" to the hearer to identify the *any* NP with whichever individual strikes his fancy. This hypothesis has the minor disadvantage that it provides no simple test of its adequacy — there is no indiscriminative paraphrase

equivalent to the existential-*even* paraphrase. In its favor, Haspelmath (1997) has observed that many languages form indefinite noun phrases equivalent to *any* NPs from concessive clauses which look to be literal offerings of free choice to the hearer, expressions equivalent to *whichever you choose*. An example is Spanish expression *cualquier*, a fossilization of a phrase meaning literally "whichever you may want". Horn (to appear) provides a thorough review of proponents of the indiscriminative analysis — "indiscriminative" is in fact Horn's term for this position.

Rullman (1996) suggests that *any* is better described under the indiscriminative analysis. Unfortunately, as Rullman acknowledges, the indiscriminative analysis is vulnerable to the chief criticism of the existential-*even* analysis: it predicts that *any* should always be emphatic. Be this as it may, Rullman's chief evidence for his position is the behavior of two expressions in Dutch, both of which can translate *any* in most contexts. One of these expressions, *ook mar iemand/iets/*etc., contains particles translating *even*, and the other, *wie/welke/*etc. *dan ook*, incorporates a *wh*-word and is by appearances an indiscriminative expression akin to *whichever*. The behavior of these expressions support the indiscriminative hypothesis over the existential-*even* hypothesis in that *Welke dan ook*, the indiscriminative expression, may occur in more of the contexts which accept *any* than does *ook mar iets*; and in certain contexts in which both expressions may occur, *welke dan ook* and *any* lack certain nuances of meaning which accompany *ook mar iets*. I refer the reader to Rullman for the full details.

This argument for the indiscriminative hypothesis is not unassailable, however. Neither of the Dutch expressions occurs in the full range of contexts in which *any* occurs. In particular, both near equivalents of *any* must be stressed, necessarily have an emphatic sense, and do not occur in those contexts in which unstressed PS *any* may occur. Furthermore, the existential-*even* paraphrase also lacks the nuances of meaning which accompany *ook mar iets* and may occur in nearly the full range of contexts which accept *any*, so long as we restrict our attention to the paraphrase *even the least/most remarkable*

and exclude *even a single*. Indeed, Horn (to appear), argues that the existential-*even* and the indiscriminative positions are for all intents and purposes interchangeable.

Let us consider why it should be that the indiscriminative and the existential-*even* analyses should in the end make more or less the same predictions. Under the indiscriminative position, *any* gives the choice of referent for the noun phrase to someone other than the speaker. From this one may universally generalize (§ 3.2.3.2): as far as the speaker is concerned, an individual chosen by somebody else is an arbitrary individual. An arbitrary individual so chosen is also liberated from the game of reference: the speaker does not exercise any choice to be coordinated with the hearer's choice. The indiscriminative analysis thus predicts that *any* will be equivalent to an unrestricted universal — by universal generalization without implicit exceptions from the game of reference. Furthermore, since the choice of referent is fully up to the person to whom choice is granted, it cannot be dependent on any other operators in the sentence: the indiscriminative analysis predicts that *any* will be equivalent to a wide scope universal. How does this make the indiscriminative analysis equivalent to the existential-*even* analysis? Under the existential-*even* analysis, *any* is evaluated relative to a set of possible referents ranked on a scale of probability; the least probable referent is in effect the referent of the *any* NP. Under the indiscriminative analysis, the speaker gives the choice of the referent to someone else, and by rational implicature the speaker is thus willing to accept *even the least probable* referent as the referent of the noun phrase. Under the first account, the scale is imposed by conventional implicature; under the second, it is imposed by rational implicature. There is a scale of probability on both accounts. This scale is crucial to generating the universal quality of *any* on both accounts. And on both accounts this scale should make *any* emphatic in all uses.

6.3.3 a laundry list of explananda

I take my empirical work to be completed. I have presented the issues which must be addressed in an account of *any* and I have established the necessity of this account by demonstrating the inadequacy of the principal alternatives.[25] The following is a list of things which must be explained.

- why *any* is prohibited in certain contexts
    - why *any* cannot refer specifically
    - why *any* cannot occur with strong epistemic modality
    - why *any* cannot occur as the subject of a negated predicate
- why *any* may occur in negative polarity contexts
    - the relationship of PS *any* to irreality
- why there is such a thing as free choice *any*
    - why FC *any* has the distribution of a generic noun phrase
    - why, unlike a generic noun phrase, FC *any* is exceptionless
    - why FC *any* cannot be contextually restricted
    - why FC *any* forms dispositional rather than habitual propositions
- why the contexts which license *any* tend to be downward entailing
- why *any* implies existence when it does and why it does not when it does not
- why *any* is neutral in certain contexts
- why *any* is emphatic in other contexts
- why *any* has a special sense in questions and imperatives

Now let us turn to the explanation.

[25] The alternatives are further discussed in § 6.5.

6.4 THE RATIONAL IMPLICATURE ACCOUNT OF *ANY*

The interpretation given to *any* in the rational implicature account is provided in (161).

(161) <u>the interpretation of *any*:</u>

$[\![\textit{any}\ \text{N}']\!] = f_{-\mathbf{S}}([\![\text{N}']\!])$

This formula is the fourth producible from the primitives we have used to provide an interpretation for *the*, $f_{+\mathbf{H}}$, *a*, $f_{-\mathbf{H}}$, and *certain*, $f_{+\mathbf{S}}$. f is a variable over choice functions. Such a function selects a member of the extension of the nominal. The subscript –**S** is a restriction on the set of choice functions f ranges over. It indicates that the speaker would not be satisfied by a choice function over the extension of the nominal were the function determined by her own preferences.[26] This restriction is compatible with two scenarios:

(162) <u>The conditions under which a choice function may bear the restriction **-S**</u>

1) The speaker does not claim to know a choice function which can select an appropriate referent[27] for the nominal.

2) The speaker has in mind choice functions fixed by someone else's preferences (someone necessarily whose preferences she does not know to be identical to her own) or by some process other than deliberate choice (a process necessarily whose choices she does not know to be identical to those determined by her preferences).

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[26] In fact, as in previous cases, **S** denotes the epistemic agent of some proposition in question, but since this is almost always the speaker, I believe it is less confusing to refer to this individual as the speaker. I will explore a case where one should conceive of *any* as making reference to an epistemic agent other than the speaker in § 6.4.5. Recall that **H** is subject to this same extension (§ 5.3.1).

[27] This may seem like an odd sort of "reference" to a "referent". The referent in this case is an individual for whom the predication in question must be true and/or felicitous, not a particular individual the speaker has in mind. Again, I use this terminology, sloppy though it may be, because I think it prevents confusion.

The first scenario may obtain and not the second, the second and not the first, or both may obtain. Note, this is not a stipulated disjunction. These two scenarios are those which are inherently compatible with the speaker's stating that she would not be satisfied by a choice function determined by her own preferences.

The first scenario, that the hearer does not know that any choice function can pick out a referent of the necessary sort, is just that which obtains in the negative polarity contexts, (163). In these contexts there might not be any choice functions at all; the nominal might have no extension.

(163) a. I didn't see any fly-winged yuzzes in the box.

b. If there were any fly-winged yuzzes in the box, I didn't see them.

c. Were there any fly-winged yuzzes in the box?

From none of the sentences in (163) may one infer that there are any fly-winged yuzzes anywhere. Negative polarity contexts are all non-veridical (Zwarts, 1995): if you represent such a context as $O(p)$, where O is the negative polarity operator and p is a proposition, from the proposition $\lambda q.r(O(p))$[28] containing such a context one cannot infer p, therefore one cannot infer that any referring expression in p necessarily has any extension. Compare the contexts of (163) to the non-negative polarity contexts in (164).

(164) a. I saw fly-winged yuzzes in the box.

b. After the fly-winged yuzzes left the box, I didn't see them anymore.

c. Since there were fly-winged yuzzes in the box, I put it down.

From all of these sentences one may infer that there are fly-winged yuzzes.

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[28] This formula expresses the following: The proposition r has a propositional constituent q which has been lambda abstracted. To this open proposition, one applies beta reduction, substituting the proposition $O(p)$ for the variable q. This formula is thus a general description of any proposition containing a propositional operator O.

The second scenario, that the speaker wishes the choice function to be determined by something other than her own preferences, creates an indiscriminative *any* — this is just the blank warranty referred to by Vendler.

(165) a. Ask anyone you like.

b. Do anything you like.

c. Do you see anything here that you want?

d. Anyone you ask will tell you so.

In the first scenario, the speaker is making no claim regarding any particular choice function, or any choice function at all, so she is making no claim regarding any particular referent, or any referent at all. In the second scenario, the speaker is making some claim regarding every choice function, though not regarding any particular choice function, so she is making a claim regarding every referent, though not regarding any particular one.

When the first scenario obtains but not the second, *any* conveys no particular degree of emphasis (166).

(166) When I went to Tuscaloosa, I didn't visit anyone. It was a business trip. I just picked up the package and left.

When the second scenario obtains but not the first, one can only have free-choice *any* (167).

(167) Anyone here you ask will tell you that what I said is true.

When both obtain, the result is emphatic PS *any* (168).

(168) I don't think ANYONE knows the answer to that question!

(168) is paraphrasable as (169).

(169) Try as you might, I don't think there is a way you can choose individuals such that you will select an individual who knows the answer to that question.

The first clause of (169), 'try as you might', offers the determination of the choice function to the hearer, as per the second scenario. The remainder of (169) states the speaker's belief that the hearer cannot choose an individual of the necessary sort, as per the first scenario.

Right off we can see explanations for several facts. *Any* can occur in negative polarity contexts because these instantiate the first scenario. *Any* has a free choice use because this instantiates the second scenario. FC *any* has the distribution of a generic indefinite because the two generalize by the same mechanism: universal generalization. Unlike a generic indefinite, FC *any* is exceptionless because the range of choices it expresses a generalization over is not restricted by the game of reference. Giving the choice of referent to another individual, explicitly indicating that one will not be satisfied by a choice determined by one's own preferences, is incompatible with implicit restrictions. PS *any* need not be emphatic, because emphaticness is not inherent in an assertion that a choice function might not exist, as per the first scenario. FC *any* is necessarily emphatic, because FC *any* is in effect an indiscriminative existential and indiscriminative existentials are necessarily emphatic (§ 6.3.2). For the remaining explananda I will provide somewhat lengthier arguments.

6.4.1 deriving the non-specificity of *any*

One thing that this theory of *any* does for us most obviously is that it provides an explanation for the non-specificity of *any*. I remind the reader that by describing *any* as non-"specific" I do not mean to take a stand on just what is going on in all the various phenomena which are grouped under this rubric. I have simply declared that when I use the term I mean to designate reference wherein the speaker has a particular referent in

mind. By analyzing *certain* as adding the restriction +**S** to a choice function, I ensured that it was compatible with specific reference so defined (§ 5.3.2). By analyzing *any* as adding the restriction –**S**, I ensure that it is incompatible with specific reference.

If the speaker intends to refer specifically, she intends to communicate that she will be satisfied by a choice function for the referring expression in question only if it is determined by her preferences (or if it chooses as though it were determined by her preference). She intends to refer to a particular individual; this is the individual selected by her preferences; and a function which selects a different individual will not select the individual she is referring to. But the restriction –**S** forbids precisely such choice functions. For the speaker to intend specific reference but to intentionally restrict choice functions to be those which are –**S** is for her to deliberately act contrary to her own desires, which is irrational. By rational implicature, *any* must have non-specific reference.

6.4.2 deriving a preference for downward-entailing contexts

Another goal this theory of *any* achieves for us quite straightforwardly is to explain why the contexts which license *any* tend to be downward entailing.[29] If a sentence *s* is downward entailing on an argument position containing referring expression *e*, any sentence differing from *s* only in that *e* is replaced by a more precise description *e*' is entailed by *s*. This is what it means for *s* to be downward entailing on this argument position. An indiscriminative *any* noun phrase is one which, as far as the speaker is concerned, is to be interpreted via some arbitrary choice function over the nominal. Emphatic *any* is effectively indiscriminative. Non-emphatic *any* is truth-conditionally equivalent to emphatic *any* — if there is no choice function, the non-emphatic case, then

[29] Linebarger (1980a, 1987) presents a number of contexts which she believes are downward entailing yet which do not license *any*. Kadmon & Landman (1993) examine these contexts and present arguments that these in fact are not downward entailing. I refer the reader to the latter work for further discussion of this issue.

the speaker cannot object to anyone else's choosing the function, the emphatic case (see also § 6.3.1.1). Thus, as far as the speaker is concerned, every use of *any* can be interpreted via some arbitrary choice function over the nominal. Since the choice function is arbitrary, any choice is possible, and the description is maximally vague. Any particular choice function would be equivalent to a more precise description.

If a predicate is downward entailing on a particular argument position and it may be truly predicated of an individual of *some* description (i.e., nominal), then it may be predicated of an individual described by the same nominal modified by *any*; such a description entails all and only the precisifications of the original description.

6.4.3 *any* and irrealis contexts

Earlier in § 6.4 I providde an account of why *any* occurs in negative polarity contexts: these are non-veridical contexts. In non-veridical contexts referring expressions do not necessarily have any extension. If a referring expression has no extension, no choice function can select a member of its extension. Non-veridical contexts are just those in which the speaker may not wish to commit herself to the extensionality of referring expressions, therefore. And *any*, in that it may implicate that the speaker does not claim to know a choice function over the extension of the nominal, is particularly suited to introducing discourse referents in non-veridical, which is to say, negative polarity, contexts.

From this account of *any* in contexts of irrealis modality a certain difficulty arises: one might expect *any* to be licensed as well in the consequents of counter-factual conditionals. *Any* introduces a restriction on the choice function over the nominal to which it is appended such that the speaker will not be satisfied by any choice function determined by her own preferences. If the speaker will not be satisfied by a choice function determined by her own preferences, this is compatible with her not claiming to know any such choice function, which is compatible with there being no choice function

which she might claim to know. But the consequent of a counter-factual conditional also describes a counter-factual situation. There can be no choice functions which select actual members of the extension of a nominal which participate in a counter-factual situation. There being no choice function is compatible with the speaker not claiming to know any such choice function, which is compatible with the restriction **-S** on the variable over choice functions. We should expect to find that the preferred existential determiner in the consequents of counter-factual conditionals is *any*, just as it is in the antecedents.

I shall present a speculative solution to this problem. I do not wish to explore all the ramifications of this solution. I only wish to show that the non-licensing of *any* in the consequents of counter-factual conditionals is not irrefutable evidence against the rational implicature analysis of *any* that I am proposing.

The reason the consequents of counter-factual conditionals do not license *any* is that choice functions pick out referents which must be *discourse*-actual. If I say, "Ahab gazed upon a certain doubloon," I am not claiming there was any *actual* doubloon in this world, the real world, which Ahab gazed upon. Rather, I wish the hearer to posit a doubloon which Ahab gazed upon within the world of discourse. The situation in which Ahab is gazing is "actual relative to the world of discourse", and some other situation, say his wrenching the doubloon free from the mast to which he had hammered it, is not actual with respect to that world, regardless of whether or not it is actual with respect to this world. The doubloon, then, is also discourse-actual. A reasonable theory of conditionals, analogous to that adopted in Discourse Representation Theory[30], for

[30] All that DRT proposes is that the DRS representing the consequent of a conditional is interpreted relative to the DRS representing the antecedent, and that discourse referents may be introduced in the antecedent therefore which will be accessible in the consequent though not in the larger discourse in which the conditional is embedded. The sub-DRSs involved in the representation of a conditional may be considered purely syntactic devices; they need not themselves have any semantic interpretation. Nevertheless, this description of conditionals is suggestive of and compatible with the situation theoretic description, which is semantic. Also, I pointed out in § 2.2 that discourse referents must have some cognitive status in order for the discourse referents of analytically unique definite noun phrases to be inferable.

instance, and that adopted in situation semantics, is that the antecedent of a conditional establishes a new world of discourse which the speaker does not claim is actual with respect to the larger world of discourse within which it is embedded. The consequent of the conditional describes a situation which is actual with respect to the new world. It is not necessarily actual with respect to the larger world of discourse, but it is discourse-actual with respect to the world established by its antecedent. It does not follow, therefore, that no choice function can select an individual which participates in a situation described by the consequent and which is discourse-actual, so it does not follow that the consequents of counter-factual conditionals should license *any*.[31]

6.4.4 the special sense of *any* with questions and imperatives

The label 'free choice' is particularly applicable to the use of *any* in imperatives and questions. In both cases, *any* confers a politeness on the speech act, and in both cases this politeness appears to derive from the speaker's offering her addressee a choice as to how the speech act should be responded to.

(170) a. Take any apple.

b. Take an apple.

(171) a. Is there anything I can do for you?

b. Is there something I can do for you?

The hearer may respond to (170)a by taking whichever apple he chooses, or no apple at all. To (170)b he must respond by taking some apple, and it is not even clear that he is entirely at liberty to choose which one. (170)a' is infelicitous; whereas (170)b' is not.

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[31] I have heretofore stated that *any* is equivalent to a wide scope universal quantifier because the choice function is determined only by the preferences of some individual. As this discussion makes clear, however, this is a simplification. The choice function is indeed determined only by the preferences of some individual, but the domain of the choice function is determined relative to the actual world of discourse,

(170)a'. Take any apple. #Not that one.

b'. Take an apple. Not that one.

Similarly, (171)a implies that the speaker will do for the hearer anything within her power. (171)b implies that the speaker is only to prepared to respond favorably to certain requests. The difference between these examples is clearer if we consider their acceptable paraphrases. (171)a is paraphrasable as (171)a'; (171)b is not. (171)b is paraphrasable as (171)b'; (171)a is not.

(171)a'. Is there anything I may do for you?

b'. Do you want me to do something for you?

Any confers on questions and imperatives a special politeness because it confers on the hearer the choice of how the speech act should be responded to. Literally, it confers this choice on someone other than the speaker, but the hearer is the most interested party, after the speaker, in the appropriate response to the speech act. The speaker cannot make any stipulations as to who other than herself makes the choice — to do so would be to impose her preferences on the selection of the choice function. The hearer, therefore, is free to nominate himself the one to choose. Thus, the speaker in effect confers choice upon the hearer.

6.4.5 why FC *any* forms dispositional rather than habitual propositions

I believe generalizations with *any* are interpreted dispositionally rather than habitually for the same reason that *any* confers politeness on questions and imperatives. Consider (172)a and (173)a as opposed to (172)b and (173)b.

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and certain operators, namely, the conditional operator, may determine the actual world of discourse and thereby the domain of the choice function.

(172) a. John does everything for his boss.

b. John does anything for his boss.

(173) a. John reads a book during long flights.

b. John reads any book during long flights.

The first example in each pair describes what John does, whether or not he wishes to do it. The second example describes what John wishes to do, whether or not he does it. In these examples, one individual is conferring free choice on another; *any* has precisely the same effect as it does in questions and imperatives with one exception: at least superficially it appears that the conferrer is no longer the speaker and the conferee is no longer the hearer. In (172) John confers free choice on his boss. In (173), John grants free choice to someone, whoever it might be.

This mixing of roles finds a precise analog in particular uses of the quasi-determiner *certain*. Such a use of *certain* is illustrated by (156) of § 5.3.1, repeated here as (174).

(174) No one said they thought a certain man stole the bike.

(174) can mean either that no one thought a certain man whom *I* refuse to name stole the bike, or it can mean that no one claimed they thought a certain person, whom *they* refused to name, stole the bike. In (174), the variable **S** in the restriction imposed by *certain*, +**S**, is bound to someone other than the actual speaker, just as appears to be the case in (172)a–(173)a. A still more analogous example involving *certain* is (153) of § 5.3, borrowed from Enç (1991), repeated here as (175).

(175) Each child sat under a certain tree.

It is implicit in (175) that each child chose or was designated a tree to sit under; in either case, the person choosing the tree need not be the speaker and no speech act or act of choosing performed by these agents is explicitly mentioned.[32]

We need not insist on the possibility of binding **S** to someone other than the speaker of the current speech act in order to explain the free choice in (172)b and (173)b, however. If the speaker asserts that John will do something or will read something and abdicates any choice of her own in the matter as to what this something is that her assertion concerns, her assertion can only be true if John, too, abdicates his choice in the matter; for if the nature of the something in question must be determined by John's preferences, then the speaker must prefer that it be determined by John's preferences — she has an opinion in the matter —, and she cannot assert that she will be dissatisfied by a choice function determined by *her* preferences. She cannot grant free choice to just anyone, because they might not choose as John would choose.

Setting aside the identity of **S**, what causes *any* to create dispositional rather than habitual generalizations is that *any* confers free choice. In (172)b and (173)b, it confers free choice on someone other than John. Just as with the imperatives and questions, this other chooser is implicitly free to choose nothing. (172)b is still true even if John has nothing to do for his boss: were there something to do for his boss, he would do it. (173)b is still true even if he has nothing to read: were there something to read on a long flight, he would read it. If these sentences truthfully describe John's condition, they must

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[32] Linebarger (1987: 346) observes a different expression of this same phenomenon. She describes it in terms of plugs or holes for negative implicatures. In her words, "Verbs of propositional attitude such as 'believe' or 'say' appear to function as 'plugs': 'John believes that Mary didn't come to his aid because she had any sympathy for urban guerrillas' seems to attribute to John, rather than to the speaker, the NI that Mary does not sympathize with urban guerrillas." In the terms of the rational implicature account, the **S** in the interpretation of *any* may be bound to the epistemic agent of the PA predicate which immediately dominates it. In this respect as well, then, *any* is parallel to *certain*, as one would expect. Consider (i).

(i) Mary thinks a certain friend of hers is a sneak.

In (i) the certain friend may be someone known to Mary but not known to the speaker of (i); see chapter 4, § 5.3.1, et passim. In the interest of concision and time, I will not explore this point.

describe what he is disposed to do, not what he does. (172)b and (173)b cannot assert that John will do something, but only that he is willing to do anything.

6.4.6 why *any* cannot occur with strong epistemic modality

If (176) is true, it is necessarily true of an actual event.

(176) A cat must have eaten a mouse on our doorstep.

The indefinite noun phrases in (176) refer to particular individuals, but they do not refer to *specific* individuals in that they do not refer to individuals the speaker has in mind. Nevertheless, the speaker knows that particular actual individuals participated in the event described and others did not. (176) means that the speaker has reason to believe that a particular cat ate a particular mouse on our doorstep, however many other cats ate mice in the same location. The same pattern holds generally when strong epistemic modality is used: the evidence usually concerns a particular actual situation, which in most cases means that particular individuals participated in the event and others did not.

Let us consider what it would have to mean if we were to replace one of the indefinite articles in (176) with *any*.

(177) A cat must have eaten <u>any</u> mouse on our doorstep.

The *any* NP in (177) could not be interpreted as the polarity sensitive variety, as that would be compatible with there being no mouse that a cat must have eaten on our doorstep: (177) would be compatible with both (176) and its contradictory. In other words, (177) would be rather uninformative; it would mean the same things as *a cat might have eaten a mouse on our doorstep*, thus counteracting the effect of the strong modal.

If the *any* NP in (177) is FC *any*, then it is equivalent to an unrestricted universal quantifier (a consequence derived from the equation $[\![\textit{any}\ \mathrm{N'}]\!] = f_{-s}([\![\mathrm{N'}]\!])$; see § 6.4).

(178) ?A cat must have eaten every mouse in existence on our doorstep.

(178) describes a peculiar state of affairs. Even if we interpret (178) distributively, so that it means that for every mouse in existence there is some cat that ate it on our doorstep, it describes a rather semantically anomalous situation. Unrestricted universals are restricted in their usefulness in describing real world events. If we interpret (178) as concerning a particular cat, (177) is bettered paraphrase as (179).

(179) ?A particular cat must have eaten every mouse in existence on our doorstep.

(179) is more semantically anomalous than (178). Neither of these paraphrases does full justice to the semantic anomaly inherent in (177), however. FC *any* induces a generalization to have a dispositional reading rather than a habitual one. A still better paraphrase of (177) is (180).

(180) *A particular cat must have been inclined to eat every mouse in existence on our doorstep.

(180) is to my ear so anomalous as to be unacceptable.

If these various sources of semantic anomaly are truly all that keeps *any* from occurring in the scope of strong epistemic modality, then it might be possible to construct examples in which neither unrestricted universal quantification, nor particularity, nor dispositionality created any grave semantic anomaly and hence *any* would be acceptable. Indeed, to my ear all the examples in (181) are unremarkable, and (181)c,d are unimpeachable.

(181) a. If what you say is true, then any owl must hunt mice.

b. I have yet to see an example to the contrary. I'd say any mummy must have one of these things in its belly.

c. Our mineralogical survey is pretty unequivocal. Any sedimentary rock you find in these hills must have formed in the Jurassic.

d. Any message Professor Melton left you must be in the next room. We've checked everywhere else.

(a) is a case where all owls, not particular owls, are at issue and dispositionality is appropriate. (b) follows the same pattern, excepting dispositionality. (c) and (d) do not concern actual events: you might find no sedimentary rock and Professor Melton might not have left a note. In addition, (c) and (d) are compatible with unrestricted universal generalization.

All that remains to be explained is why strong epistemic modality should cause indefinites to be interpreted as particular. It is not necessary for me to explain this for my argument to go through, but I will suggest an explanation. In most cases, when one asserts a proposition with strong epistemic modality, one has strong evidence showing that the proposition is true. This evidence will most often consist of particular situations that one has witnessed. This in turn creates an expectation in the hearer that any indefinites in such an assertion refer to individuals in particular situations and hence are themselves particular.

6.4.7 why *any* cannot occur as the subject of a negated predicate

Regarding this explanandum, let us first observe that unrestricted universally determined noun phrases of all sorts are unacceptable as the subject of a negated predicate if they are interpreted as having wide scope (one may force the universal noun phrases to have the wide scope interpretation by stressing their last word).

(182) Everyone there IS knows your mother.

a.*Everyone there IS doesn't know your mother.

b.* All of the marbles in EXISTENCE won't fit into this box.

c.* Each congressman in the whole SENATE might not come to the fundraiser.

b.* No one at ALL can't open this door.

This is clearly a pragmatic rather than a semantic or syntactic fact, because these same examples are more acceptable (though only a little) if they are allowed to be contextually restricted; and they are markedly more acceptable if they are modified by an exceptive expression.

(183) a.? Everyone but Larry doesn't know your mother.

b.? All of rest won't fit into this box.

c. Each of the other senators might not come to the fundraiser.

b.? No one else can't open this door.

Essentially the same pattern of relative acceptability is exhibited by *any*.

(184) a.* Anyone didn't come.

b. Anyone who knew what to expect didn't come.

(184)b is restricted by the relative clause to those individuals who knew, though it still is not contextually restricted, and this clause also implies that such individuals are an exception to other individuals who did not know. To explain the awkwardness of *any* as the subject of a negated predicate, therefore, it is necessary only to explain why PS *any* cannot occur in this position. We have already shown that FC *any* is equivalent to a wide-scope universal, so if only FC *any* may occur as the subject of a negated predicate, we can predict the relative acceptability of sentences such as (184). Nevertheless, though it is not necessary for my argument, I will seek to explain the unacceptability of wide scope universals as the subject of a negated predicate.

If *anyone* in (184)a were polarity sensitive, by hypothesis this would mean that the speaker did not claim to know any choice function which could choose an individual

such that that individual didn't come. In other words, the speaker should believe either that there was no individual or that every individual came. Were this the case, however, (184)a would be a pragmatically odd way to express it. Rather than making a definite claim about everyone, the speaker would refuse to make the contradictory claim about anyone without having gone on the record with any definite claim at all. We could rule out (184)a as an instance of PS *any* by stipulating that every assertion must posit some situation as actual or non-actual relative to the discourse. We might also say that (184)a as an instance of PS *any* would contain an unmotivated violation of the maxim of manner. The speaker could have said, "There is no one," ?"No one didn't come," or "Everyone came," all of which are less ambiguous. Because this violation of the maxim is unmotivated, (184)a is pragmatically ruled out. In either case, there is no felicitous interpretation of (184)a as containing an instance of PS *any*.

As to why unrestricted wide scope universals cannot occur as the subject of a negated predicate, let us observe first that generic expressions in general are odd in this position except in two rhetorical contexts: they may be used to reject an earlier, contradictory but positive generic assertion; and they may be used to raise and hypothetically entertain a premise mutually regarded as false.

(185) a. ?A horse doesn't eat sand.

a'. [Are you crazy?!] A horse doesn't eat sand!

a". A horse doesn't eat sand, but suppose it did.

b. ?The tiger doesn't sleep 3 hours a day.

b'. The tiger doesn't sleep 3 hours a day!

b". The tiger doesn't sleep 3 hours a day, but suppose it did.

The reason for these restrictions is obvious. Except when they are correcting misconceptions or when a distinction among a small number of options is being discussed, negative assertions are far less informative than positive ones. The correcting

use of negated generics is informative, however. And the question of informativeness does not arise when a negative generic is used to raise a hypothetical premise; in this case, the generic statement is treated as mutually accepted and it is uttered to establish that the contradictory is entertained only as a hypothetical.

FC *any* generics are still less likely to occur as the subject of a negated predicate because, as I observed at length in § 6.3.1.1 and explained in § 6.3.2, they have an emphatic tone that other generics lack. (186)**B** by itself sounds odd. It is only natural in the context of an earlier assertion such as (186)**A**.

(186) **A**: A pregnant mare eats apples.

B: Any horse eats apples.

That is, *any* generics are used to rule out exceptions allowed by an earlier generic assertion. This observation is the basis of the existential-*even* analysis of *any* proposed by Kadmon & Landman (1993). Now imagine the contexts that would justify a negated *any* generic.

(187) **A**: A pregnant mare doesn't eat sand.

B: Any horse doesn't eat sand.

(187)**A** is plausible in a context in which the utterer of (187)**B** has evinced the misconception that pregnant mares eat sand, but such a context would render (187)**B** an impossible rejoinder. (187)**B** implies that the speaker regards (187)**A**, the contradictory of the alleged misconception, as uninformatively specific rather than contradictory to her own beliefs. Consider now (188).

(188) **A**: A pregnant mare doesn't eat sand, but suppose it did.

B: Any horse doesn't eat sand.

(188)**B** as a rejoinder completely misses the point of (188)**A**. (188)**A** raises the proposition of its first clause not to inform the hearer of its truth, but to establish that its contradictory could only be hypothetical. Since (188)**A** would not be uttered to inform the hearer about the nature of horses, it would be inappropriate to regard it as uninformative on this topic.

6.4.8 why *any* implies existence when it does and why it does not when it does not

In discussing this final explanandum I will not enumerate all the contexts of use of *any*, specify whether or not *any* presupposes the existence of its referent in this context, and offer an explanation of this particular fact. Instead, I will explain two general patterns. First, in most contexts *any* does not imply the existence of its referent, (189). Second, in some free choice uses, *any* does imply the existence of its referent, (190).

(189) There may be no man with a question about a dog, but

a.*a man with a question about a dog is in the next room.

b. any man with a question about a dog is in the next room.

(190) a. A hairless bear sleeps in a deep den.

b.?Any hairless bear sleeps in a deep den.

The reason for the general acceptability of *any* NPs in contexts which suspend any presupposition of the existence of their referents is that the restriction on choice functions

imposed by *any* is consistent with there being no choice function and thus no referent. This issue is discussed at greater length above in § 6.4.[33]

As for the implication of existence in (190) it derives from the aforementioned fact that *any* generics are used almost exclusively to reinforce earlier conventional generics by ruling out the exceptions that they admit. Thus it isn't that they presuppose the existence of referents of their type per se, but they presuppose the existence of the type as a category under discussion in the discourse, which in general implies the existence of instances of the type. (190)b is appropriate in a context in which it has been implied that there are different sorts of hairless bears, only some of which sleep in deep dens, which would entail that there exist hairless bears.

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[33] The question then becomes why *a*, which also imposes a restriction, –**H**, compatible with the non-existence of a choice function, is incompatible with the non-existence of the referent. In fact, in other contexts the indefinite article clearly does not presuppose the existence of the referent of the indefinite noun phrase.

(i) There isn't a green house on this street.

I suggest the reason for the presupposition of existence in (189)a is in part competition with *any*. Restricting relatives and reference to a specific situation both strongly encourage that *a* be understood with specific reference. Furthermore, if one wishes to indicate non-specific reference, both *any* and various indicators of irrealis modality are available, as illustrated in (189)b and the continuations (ii)–(iii).

(ii) a man with a question about a dog might be in the next room.

(iii) I suspect a man with a question about a dog is in the next room.

The presence of factors indicating specific reference and the availability of factors that indicate non-specific reference lead the hearer to understand the indefinite noun phrase in (189)a as specific, which is incompatible with the suspension of the presupposition of existence. This explanation should be expanded upon, as one might expect the explicit suspension of the presupposition of existence to be sufficient grounds for the hearer to understand the indefinite noun phrase in (189)a as non-specific. Perhaps (189)a remains infelicitous because if one must understand it as involving a non-specific noun phrase it presents a violation of the maxim of manner. Compare (i) to its parallel (iv), an example analogous to (189)a in its unacceptability and conflicting evidence of (non)specificity.

(iv) ?There isn't a tall, round-shouldered man currently carrying a sleepy child on this street.

I will leave this issue unresolved. We have, at any rate, an explanation for the acceptability of (189)b.

6.5 OTHER ACCOUNTS OF *ANY*

Many accounts of *any* have been proposed in the past several decades. I have mentioned the principal varieties of most of these already. There have been univocal universal accounts (Quine, 1960; Lasnik, 1975; Hintikka, 1977). I discussed these in §§ 6.1 and 6.2.1. It has been claimed that *any* is polysemous, the PS uses being existential and the FC uses, universal (Ladusaw, 1979, 1980; Carlson, 1980, 1981; Linebarger, 1980a,b, 1987). I discussed such accounts in § 6.2.3. The trend over the decades has been towards univocal existential accounts, beginning with Davison (1980) and Carlson (1980a,b) and continuing through Krifka (1990a,b), Kadmon & Landman (1993), Israel (1996), and Lee & Horn (1994). I discuss the motivations for such accounts in §§ 6.2.2 and 6.3.1. I will now discuss these accounts in somewhat greater detail, tracing their relationship to the generalized existential-*even* account which I first argued for in § 6.3.1 and then against in § 6.3.1.1. Two other traditions of analysis also deserve comment. The first is the syntactic accounts. I shall discuss these only briefly. The second I shall call the negative implicature analysis after its more recent incarnation. I shall discuss it in somewhat greater detail; it has been quite influential and certain of its insights must be incorporated into a satisfactory analysis of *any*.

6.5.1 syntactic analyses

Purely configurational analyses of *any* or negative polarity items originate in Klima (1964). This study pointed out that polarity sensitivity is conditioned by certain syntactically definable contexts called “affective” contexts by Klima. It was postulated that polarity sensitive items occurred in pairs and a suppletion rule would insert the proper member of a pair at a particular terminal node depending on whether that node was marked + or - [AFFECTIVE]. This approach proved inadequate, as there are polarity sensitive items which do not have any obvious partner of the opposite polarity, and paired

expressions, such as *any* and *some*, are not completely complementary in distribution. For instance, both may occur in a question or the antecedent of a conditional.

(191) a. Do you want something?

b. Do you want anything?

(192) a. If someone pokes me in the eye, I poke him back.

b. If anyone pokes me in the eye, I poke him back.

In these contexts, the different expressions carry different implications: the speaker of (191)a is more likely to be implying a threat than the speaker of (191)b; conversely, the speaker of (192)b expresses more reckless vindictiveness than the speaker of (192)a. This difference in interpretation is also not congruent with Klima's rule. More recent configurational analyses, such as Laka (1990), Progovac (1992, 1994), and Uribe-Etxevarria (1994) account for these deficiencies by positing that negative polarity items require licensing by a negative operator in one position or another. I will not get into the particulars of these analyses. For a critique with cogent counter-examples, see Tovena (1998). A number of general considerations argue against any purely syntactic analysis. For one thing, all of the contexts conditioning the occurrence of *any* are describable in semantic terms. Affective verbs, for instance, are not an arbitrary lexical class, but are distinguished by a particular propositional attitude. The same can be said of negative particles, verbs, prepositions, and so forth. Any syntactic theory within which one could define these as natural classes would have to admit extensive lexical semantic decomposition. This is not beyond the syntactic pale, but it does suggest a semantic analysis. More difficult for a syntactic analysis to account for are contexts in which the distribution of *any* is conditioned by pragmatic implicature. Consider (193), adapted from examples (143)b,c from Linebarger (1987).

(193) a.*The mad general kept issuing orders seconds after there was anyone to obey them.

b. Particles continued to be emitted from the sample seconds after any were being fired into it by the cyclotron.

In this case, when a certain interval has elapsed after certain state of affairs have ceased to be, one expects certain activities related to these states of affairs also to cease. The negative implicature in examples such as (193)b is just that there is this expectation and it has been thwarted. The interval is crucial in generating this implicature and its size varies according to the state of affairs. The relevant interval has not elapsed in (193)a, so the negative implicature cannot be generated, so *any* is not licensed (for more explicit discussion of this example, see the work cited; for more discussion of negative implicature, see § 6.5.3 below). If this were an isolated case, one could argue for a hybrid analysis, *any* sometimes being licensed syntactically, other times, pragmatically. As Linebarger argues, however, negative implicatures are endemic and central to the licensing of *any*.

If a purely syntactic analysis is implausible, it is also implausible that syntax may be ignored altogether. One cannot state the locality restrictions which rule out *anyone wasn't seen by me* without the use of syntactic terms. Nevertheless, I have largely set the locality restrictions on the use of *any* aside and will continue to do so. For what I have set out to describe, semantic and pragmatic notions are sufficient.

6.5.2 existential-even analyses

6.5.2.1 Horn, Fauconnier, & Ladusaw

The foundation of the existential-*even* analysis of *any* was established by Horn (1972), Fauconnier (1975a, 1975b), and Ladusaw (1980). Fauconnier held that the distribution of polarity items could be characterized semantically. He observed that many negative

polarity items correspond to the endpoints of semantic scales and argued that scalar inferences were at issue in licensing negative polarity items. Ladusaw (1980) built on this observation. Ladusaw posited that negative polarity items are licensed in downward entailing contexts, contexts in which subset for superset substitutions are truth preserving. The scope of negation, for example, is downward entailing, (194)a, and it licenses negative polarity items, (194)b.

(194) a. I don't eat meat. → I don't eat chicken.

b. I don't <u>give a damn</u>/have <u>a thin dime</u>/eat <u>any</u> meat.

This account is elegant and impressively successful at predicting where negative polarity items will be licensed. It is not entirely successful, however. For one thing, not all negative polarity items are licensed in the same contexts. *Any* is said to be a weak NPI that is widely licensed. Other NPIs such as *until* are said to be strong and are more restricted in the environments in which they may occur. For another thing, not all contexts which license *any* are downward entailing, (195), and not all downward entailing contexts license *any* , (196).

(195) a. If he doesn't <u>smoke</u> after a meal, Juan is peevish and unpleasant. ↛

If he doesn't <u>smoke a Cuban cigar</u> after a meal, Juan is peevish and unpleasant.

b. If he doesn't eat <u>any</u> dessert after a meal, Juan is peevish and unpleasant.

(196) a. A mammal wasn't seen by Carl. → A cat wasn't seen by Carl.

b.* Anyone wasn't seen by Carl.

Furthermore, though Ladusaw's account was inspired in part by Fauconnier's observations regarding negative polarity and scalar inferences, Kadmon & Landman (1993) have argued that it is merely descriptive, not explanatory. The downward

entailment account portrays polarity sensitivity as an arbitrary property of lexical items. In any case, the downward entailment account is an account of negative polarity in general. It has nothing to say about FC *any*, which it must regard as a distinct lexical item from PS *any*.

6.5.2.2 Krifka

The downward entailment account of polarity sensitivity is purely semantic. Manfred Krifka has sought to provide a partially pragmatic account of the same phenomenon (Krifka, 1990a,b). Krifka uses a lattice-theoretic semantics the particulars of which need not concern us. In essence, Krifka postulates that negative polarity items are associated with a set of alternatives in the same semantic field each of which is more informative than the negative polarity item. For example, associated with *a red cent* and *a thin dime* are all the larger, non-negligible quantities of money. Associated with *anyone* are all other, more specifically described people. Negative polarity items, on this account, explicitly evoke this set of more informative alternatives whenever they are used. They are only suitable, therefore, in contexts which reverse the scale of informativeness. In these contexts negative polarity items are maximally informative. In other contexts they are maximally uninformative, and because they deliberately evoke the more informative alternatives which might have been used, they are deliberately uninformative. They are ruled out in these contexts because to be deliberately uninformative violates cooperativity.

The arguments which have been raised against Krifka's account (e.g., Kadmon & Landman, 1993; Israel, 1996), are that violations of Grice's maxims do not generally equate with ungrammaticality, and that moreover there are expressions which are explicitly uninformative and yet quite acceptable. Among these are tautologies and understatements.

(197) a. War is war.

b. Dating Iphigenia was not the smartest thing I've ever done.

Tautologies and understatements are acceptable because they imply other more informative propositions. Krifka's account therefore cannot so simply predict the degree of unacceptability that is generally perceived in sentences such as (198).

(198) *I saw anyone at the party.

For Krifka's account to be satisfactory, he would have to show that there is no implication of *any* equivalent to those which make tautologies and understatements acceptable.

6.5.2.3 Kadmon & Landman

Krifka's account again is an account of negative polarity items in general and not *any* per se. It contains the rudiments of the existential-*even* account of *any* in that there is a necessary degree of informativeness relative to a range of options which are explicitly evoked. Kadmon & Landman (1993) presents a true variant of the existential-*even* account. According to Kadmon & Landman, the semantics of *any* may be defined by four stipulations and one codicil

(A) *any CN* = the corresponding indefinite NP *a CN* with additional semantic/pragmatic characteristics (widening, strengthening) contributed by *any*

FC The sole difference between PS *any* and FC *any* lies in the interpretation of the indefinite NP: in the case of FC *any*, it is an indefinite INTERPRETED GENERICALLY.

(B) WIDENING
In an NP of the form *any CN*, *any* widens the interpretation of the common noun phrase (CN) along a contextual dimension.[34]

[34] To illustrate, consider the use of the expression *a potato* in (i).

(i) Do you have a potato?

This might be understood in context to mean (ii).

(C) STRENGTHENING
Any is licensed only if the widening that it induces creates a stronger statement, i.e., only if the statement of the wide interpretation ⇒ the statement on the narrow interpretation

(D) LOCALITY
Strengthening is to be satisfied by the 'local' proposition that *any* occurs in.

(Kadmon & Landman, 1993: 374; emphasis in the original)

Widening and strengthening introduce the options relative to which *any* is to be judged and mandate that it be more informative. Kadmon & Landman avoid the objections to Krifka's proposal by including strengthening as part of the lexical content of *any*. It is not merely that to use *any* in the wrong contexts would be uninformative, but it would fail to be able to express a necessary part of its semantics. They get the FC uses of *any* and their distribution for free, as it were, by declaring *any* to be a variety of indefinite determiner and declaring FC *any* to be simply the generic uses of this determiner. Kadmon & Landman offer a proposal for the semantics of generic noun phrases as well, but really their analysis will go through, perhaps with a few modifications, whatever the final analysis of indefinite generics might be.

Kadmon & Landman's account of *any* is largely successful. Indeed, I have sought to show that the rational implicature account predicts an existential-*even* use for *any*. Their account may be faulted, however, on two grounds. First, in defining *any* by four stipulations they predict 14 different varieties of expression — all of the ways of choosing a subset of these four excluding the null set and locality alone. Some of these varieties exist. For instance, (A) alone is represented by the indefinite article and (C) alone is represented perhaps by asseverative particles such as *indeed*. Other combinations, such as (B) and (D), widening and locality, or (A) and (C), indefiniteness and strengthening, are less obviously represented in the inventories of the world's

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(ii) Do you have an edible potato?

This is the "narrow" meaning that *a potato* has in context. If *a* were replaced by *any*, this narrow meaning would be widened along the dimension of edibleness to include inedible potatoes.

languages. If these other varieties of expression cannot be found, at the very least more explanation is required. The second problem with Kadmon & Landman's account is that not all uses of *any* are clearly of the existential-*even* variety. I presented these criticisms in § 6.3.1.1 above, but to recapitulate, there are non-emphatic uses of *any*, which is contrary to the prediction of the strengthening and widening stipulations, and the existential implications of *any* differ from those of the indefinite article in ways that are not predicted by the existential-*even* analysis. I refer the reader to § 6.4.8 for discussion and examples.

6.5.2.4 Lee & Horn

Lee & Horn (1994) is in one respect the paradigmatic existential-*even* analysis of *any*: it is the only analysis which presents and uses as evidence the existential-*even* paraphrase. Lee & Horn analyze *any* as an existential determiner identical in semantics to the indefinite article combined with the focus particle *even*. *Even* invokes a scale of probability over a range of alternatives. For PS *any*, the alternatives are different

quantities. For FC *any*, the alternatives are different kinds.[35] The existential-*even* paraphrase of PS *any*, therefore, is *even a single/bit*. The existential-*even* paraphrase of FC *any* is *even the Xest*. Lee & Horn take the syntactico-semantics of the indefinite article to be that described in Diesing (1992); I will discuss the contribution of her analysis to their account momentarily.

Lee & Horn are able to explain the division of *any* into polarity-sensitive and free-choice uses as arising from the two natural varieties of alternatives for the scale introduced by the incorporated *even*. They are able to explain other facets of the behavior of the determiner, such as the configurational restrictions on PS *any* and its non-occurrence with approximative adverbs, as arising from purely syntactic constraints statable within Diesing's theory. This hybrid syntactico-semantic theory also creates certain problems from Lee & Horn, however. First of all, there are problems with the scalar analysis in general. Second, there are problems with the particular scales which Lee & Horn invoke: a scale of quantities and a scale of kinds. Third, there are problems inherent in Diesing's syntactic analysis of the indefinite article. I will explore each of these classes of problems in turn.

One of the characteristics of all uses of *any*, as observed above, is that both varieties, polarity-sensitive and free-choice, are modifiable by the expressions *whatsoever* and *at all*. Since Lee & Horn analyze all uses of *any* as scalar, they accept the suggestion of Kadmon & Landman (1993), that *whatsoever* modifies an expression which denotes the absolute lowest level on an implicational scale. However, Lee & Horn also observe that *whatsoever* cannot modify the existential-*even* paraphrase, which is undoubtedly such an expression.[36]

(199) *I didn't see even a single person whatsoever at the park.

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[35] This is the terminology of Lee & Horn. By kind they mean not well-established kind, but type of individual.
[36] This was pointed out to them by Chris Collins and Richard Kayne.

This might be attributed to the restriction against more than one focus particle associated with a particular focus. If this explanation were sufficient, expressions which unambiguously refer to the ends of implicational scales but which do not involve focus particles should accept modification by *whatsoever*. This is not the case.

(200) *I didn't see one person whatsoever.

(201) *You should expect trouble on the first day whatsoever of your journey.

Lee & Horn claim (202) contains such an instance, but I find this example questionable at best.

(202) ?I don't have a single pen whatsoever to write with. (96)b

A different analysis of *whatsoever* is that it modifies indiscriminative expressions. (200)–(202) are not indiscriminative expressions, so one would not expect them to be modifiable by *whatsoever*. Also congruent with this analysis is the observation that *whatsoever* can only modify emphatic *any*.

(203) a. Did you see anyone whatsoever?

b. Did you see anyone?

(203)a expects a negative reply, unlike (203)b. As discussed in § 6.3.1.1, emphatic expressions, such as end-of-scale NPIs and emphatically stressed *any*, force a rhetorical reading on yes-no questions, and hence cause them to expect a particular answer. Also discussed in that section is that indiscriminative *any* must be emphatic. Since Lee & Horn's is a purely scalar analysis, however, this indiscriminative analysis of *whatsoever* is unavailable to them.

In § 6.3.1.1 above I pointed out a problem with the scale of quantities, assuming this produces the paraphrase *even a single/bit*. As pointed out by Rullman (1996), *even* can occur with minimizer NPIs and quantity expressions but *any* cannot.

(143) a. Camille didn't eat even a single bite.

b.*Camille didn't eat any single bite.

(144) a. Camille won't last even a minute in that free-for-all.

b.*Camille won't last any minute in that free-for-all.

The offending pattern of acceptability does not arise if we restrict our attention to paraphrases involving a superlative.

(145) a.*Camille didn't eat even the least remarkable single bite.

b.*Camille won't last even the least remarkable minute in that free-for-all.

This difference in acceptability of the two paraphrases and the congruence of the pattern for superlative+*even* with the pattern for *any* suggests the existential-*even* paraphrase cannot involve a quantity scale but must always involve a scale ranking individuals of some sort under different descriptions.

Among the problems with Lee & Horn's notion of a scale of kinds is that it implies that kind reference is involved in generic uses of the indefinite article. In support of this, Lee & Horn provide (204) and (205), their examples (63) and (64). These examples are meant to contrast quantity and kind scales involved in the interpretation of the indefinite article.

(204) Why are you taking so many cookies? I said you could have *a* cookie.
(L&H cite Michael Niv, p.c.)

(205) **A**: Don't you like only green apples?

B: Well, I like *a* apple. I don't care which one.

I find (205) quite odd, however. Its only felicitous interpretation requires the indefinite NP to be a taxonomic indefinite. FC *any* may be but need not be taxonomic.

(206) Hedwig can read anything written in Sumerian. [taxonomic?]

(207) Hedwig can read any cuneiform tablet in that pile. [non-taxonomic]

Furthermore, if we take the notion of a scale of kinds literally, it is unexpected that neither generic indefinites nor FC *any* NPs may occur as the kind argument of predicates of kinds (except, perhaps, on the taxonomic reading).

(208) a.* A dinosaur is extinct.

b.* Any dinosaur is extinct.

(209) a.* Edison invented an incandescent lightbulb.

b.* Edison invented any incandescent lightbulb.

Finally, and most importantly, if FC *any* involves a scale of intensional individuals, individuals differentiated by properties, examples of the following sorts are problematic.

(210) a. Any guy named Sue has mean parents. ≠

b. ? Every variety of guy named Sue has mean parents.

(211) I like any student, including thát one.

If FC *any* ranges over types of individuals, the two sentences in (210) should be equivalent. If FC *any* ranges over intensional individuals of a more mundane sort, intensional individuals of which there may be more than one instance simultaneously, (211) should be disallowed. (211) inserts into the range of *any* an individual which is defined ostensively, not intensionally.

Semantics aside, there are many syntactic problems with Lee & Horn's analysis of *any*. Diesing treats indefinites as polysemous, as either quantifiers or variables. She is forced into this position by certain considerations unique to Government-Binding Theory. Quantifier indefinites are bound by a covert generic operator akin to *usually*. Aside from

the difficulty of specifying the semantics of such an operator[37], this causes there to be redundant explanations for the universality of FC *any* under Lee & Horn's analysis: 1) FC *any* is a generic indefinite, and hence inherits quasi-universality from the generic operator; 2) FC *any* invokes a scale of kinds. Diesing's theory also raises new questions which it fails to answer: Could existential determiners equally well be ambiguous between an existential and a quantifier meaning where the quantifier was equivalent to *few*, say? Could there be a language with indefinite determiners which were unambiguously generic quantifiers or variables? Finally, Diesing invokes E-type pronouns to explain apparent instances of text-level existential closure.[38]

(212) Oscar owns sheep. Otto vaccinates them. [ex (1), p. 56]

Diesing has good reason for invoking E-type pronouns: the existential closure solution incorrectly predicts that the second sentence is equivalent to *Otto vaccinates some of the sheep that Oscar owns*. If E-type pronouns must be invoked to explain text-level existential closure, we have redundant mechanisms with which to explain sentential existential closure (cf. Heim 1990). Diesing's special *syntactic* explanation of this phenomenon is unnecessary and furthermore, one can only determine by stipulation whether a particular instance of existential closure is syntactic or semantic. It would be desirable to discard the syntactic mechanism, therefore, but Lee & Horn require it to

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[37] Consider how one would define a generalized quantifier which would give the correct interpretation to each of (i)–(iii).

(i) Galapagos tortoises live over a hundred years.

(ii) Guppies give live birth.

(iii) Prime numbers are divisible without remainder only by themselves and 1.

[38] Existential closure is a notational device which allows one to treat indefinite NPs as free variables which take their quantificational value from other quantifiers, if these are available, and otherwise from a default existential quantifier which binds all unbound variables in a sentence. *A guppy always dies* thus is equivalent to *all guppies die*, and *a guppy died* is equivalent to *there exists a guppy who died*. Text level existential closure is the same mechanism but with the default existential quantifier at the level of the text rather than the sentence.

explain such things as the differential behavior of PS and FC *any* with respect to approximative adverbs.

6.5.2.5 Israel

The intellectual antecedents of Michael Israel's analysis of polarity sensitivity Israel (1996) are Fauconnier (1975a,b, 1979), Ladusaw (1979, 1980), and Kay (1990), but it bears a strong resemblance to Kadmon & Landman (1996). According to Israel, polarity sensitivity derives from the lexical association of one of two values in two semantic dimensions to particular lexical items: high or low scalarity and emphasis or understatement. Unlike Kadmon & Landman, Israel demonstrates that all of the combinations of independent semantic value he postulates corresponds to some class of expressions. *Any* in Israel's account belongs to the class of low scalar emphatic polarity items.

Israel does not set out to explain all the uses of *any*. In particular, he does not have anything to say about the free choice uses. Presumably he would not want his account to predict the free choice uses, since his account of *any* does not differ from that of the other low scalar emphatic polarity items, which do not have any free choice use.

(213) a. The baker couldn't leave a single crumb of bread for the mouse.

b.*The baker could leave a single crumb of bread for the mouse. ≠

c. The baker could leave any bread for the mouse.

It doesn't help matters that the set of contexts licensing even PS *any* is much wider than that licensing other low scalar emphatic polarity items. Consider (214) and (215).

(214) a. Did you see anyone?

b. Did you see a single person?

(215) a. I'm glad anyone looked at my poster!

b. ?I'm glad a single person looked at my poster!

6.5.3 negative implicature analyses

Negative implicature analyses, represented by Baker (1970a, b) and Linebarger (1980a, b; 1987) argue that *any* may be licensed either directly by negation or indirectly by being licensed in a proposition implied by the original sentence.

6.5.3.1 Baker

Baker's (1970a, b) account of negative polarity items is a hybrid account, part syntactic and part semantic. The syntactic element is that negative polarity items are licensed directly when they are c-commanded by a negative morpheme. The semantic element is that negative polarity items are indirectly licensed when the sentence they occur in entails a proposition in whose linguistic representation they are c-commanded by a negative morpheme. In (216), the NPI *give a damn* is directly licensed by being within the scope of *not*.

(216) John doesn't give a damn.

(217) does not contain any negative morpheme, but it does entail (216), so *give a damn* is licensed in (217) as well.

(217) John is too tired to give a damn.

One problem with this two-stage licensing via entailment is that there are trivial entailments available to any sentence which should be able to license any negative polarity item indirectly. (218) illustrates double negation, tautologies, and contraposition.

(218) a. John saw Bill at the store. →

It is not the case that John didn't see Bill at the store.

John saw Bill at the store and John either did or did not see Bill at the store.

b. If John saw Mary, then John saw Bill. →

If John didn't see Bill, then John didn't see Mary.

One may also derive trivial entailments via de Morgan laws: $p \wedge q \rightarrow \neg(\neg p \vee \neg q)$; $p \vee q \rightarrow \neg(\neg p \wedge \neg q)$. On Baker's account, one should be able to replace *Bill* in both (218)a and (218)b with *anyone*, since both sentences have entailments in which *Bill* is c-commanded by negation. Baker thus must stipulate that *these* entailments cannot indirectly license negative polarity items. Another problem with this account is that the c-command relation by itself is too generous (i.e., generative). Negative polarity items are not always licensed in embedded clauses c-commanded by negation; consider (219)a ((219) is based on Linebarger, 1987, examples (40) and (41)).

(219) a.*John didn't add that Hank knew <u>a damned thing</u>.

b. John didn't say that Hank knew <u>a damned thing</u>.

The contrast between (219)a and (219)b suggests that no structural modification to the notion of c-command or stipulative general restrictions on the entailments allowed will suffice to predict just when negative polarity items are licensed.

Another inadequacy of Baker's account is that it has nothing to say about FC *any*.

<u>6.5.3.2 Linebarger</u>

Linebarger (1980a,b, 1987) is an attempt to rehabilitate Baker's account by replacing the notion of entailment with the more general notion of implicature. Her version of direct licensing is captured by her Immediate Scope Constraint,

> A negative polarity item is acceptable in a sentence *S* if in the LF of *S* the subformula representing the NPI is in the immediate scope of the negation operator. An element is in the immediate scope of NOT only if (1) it occurs in a proposition that is the entire scope of NOT, and (2) within this proposition there are no logical elements intervening between it and NOT.
>
> (Linebarger, 1987: 338)

Linebarger's version of indirect licensing, which she calls derivative licensing, is given by the following,

> (i) **Expectation of negative implicatum is itself a conventional implicature**. A negative polarity item contributes to a sentence *S* expressing a proposition *P* the conventional implicature that the following two conditions are satisfied.
> (ii) **Availability of negative implicatum**. There is some proposition NI (which may be identical to *P*) which is implicated or entailed by *S* and which is part of what the speaker is attempting to convey in uttering *S*. In the LF of some sentence *S'* expressing NI, the lexical representation of the NPI occurs in the immediate scope of negation. In the event that *S* is distinct from *S'*, we may say that in uttering *S* the speaker is making an *allusion* to *S'*.
> (iii) **NI strengthens *P***. The truth of NI, in the context of the utterance, virtually guarantees the truth of *P*.
>
> (Linebarger, 1987: 346; emphasis in original)

Notable in this definition of derivative licensing is the first sentences of part (ii): "There is some proposition NI … which is implicated or entailed by *S* and *which is part of what the speaker is attempting to convey in uttering S*." It is this clause which promises to differentiate Linebarger's analysis from Baker's. One could argue that the trivial negative entailments that Baker must stipulate away are not part of what the speaker is attempting to convey; this is just why they are trivial. One could argue that the difference between (219)a and (219)b is just that the former either fails to generate or somehow blocks a negative implicature generated by the latter. Unfortunately, Linebarger is unable to make this clause more explicit. She suggests the following emendation, "Restricting [derivative] licensing to implicature, to NIs which express something over and above what is actually asserted, would rule out these trivial entailments as NIs" (*ibid.*: 347). Then she is forced to admit that in some cases it is just such trivial entailments that are the NIs she wishes to use as explanation for NPI licensing. For example, her explanation for the acceptability of NPIs outside the focus of *only* is just that (*only X*)(… *any Y* …)

entails ($\forall x$: $\neg X$)$\neg$(… *any Y* …); *only Mark saw anything* entails *anyone who is not Mark did not see anything*. Because of this she cannot prove that any trivial entailment will be excluded, so she too must exclude the undesirable ones by stipulation. Secondly, there are cases in which someone uttering a positive sentence clearly does wish to convey a proposition which can be formulated negatively, yet the positive sentence does not license negative polarity items. Kadmon & Landman (1993) provide the following example.

(220) a.*Even Sue said anything.

b. Sue was the most likely not to say anything.

(220)a should mean what is expressed in (220)b, yet *any* is not licensed in (220)a. For more examples demonstrating that Linebarger's account overgenerates licensing environments for negative polarity items, see Kadmon & Landman (1993). Even if she could evade these problems, Ladusaw (1983) points out that metalinguistic negation is a problem for Linebarger's approach, since direct licensing is defined in purely syntactic terms. This being so, (221) should be acceptable.

(221) *Clarice did not HURL any tomatoes at the wall (… she gently tossed them.)

Given the aims of this thesis Linebarger's account is inadequate because it fails to provide an account of FC *any*, assuming instead that *any* is polysemous, with both FC and PS meanings.

Despite these flaws, Linebarger does seem to get at a generalization that the other analyses of negative polarity and *any* miss. It does seem to be the case that *any* often either implies a negative proposition or fails to imply a positive one. For instance, compare (222)a and (222)b, derived from Linebarger (1987) example (155).

(222) a. If you're going to convict him, you'll need hard evidence that there's anything illegal in what he did.

b. If you're going to convict him, you'll need hard evidence that there's something illegal in what he did.

(222)b implies that the speaker believes that there is something illegal in what the person did. (222)a implies that the speaker does not believe this. Or perhaps (222)a implies that the speaker believes there is nothing illegal in what the person did and (222)b implies that the speaker does not believe this. In any case, (222)a does not imply that the speaker believes what the person did was illegal and (222)b does not imply that she does not believe what he did was illegal. Now compare (223)a and (223)b, Linebarger's (185) and (186).

(223) a. If you think John had fun, you should have seen Fred!

b.* If you think John had any fun, you should have seen Fred!

(223)a is a rhetorical conditional; the speaker states *you think John had fun* as hypothetical, but clearly he regards it as mutually known that this is so. Indeed, this is crucial to the sense of (223)a. This sentence conveys the sense of (224).

(224) Granted John had fun, but Fred also had fun and to a more remarkable degree.

The purpose of the antecedent of (223)a is to establish a standard by which to measure the fun had by Fred. It can only serve this purpose so long as its propositional content is understood to be mutually believed. The antecedent of (223)b does not allow this understanding, it does not implicate the proposition which would license the rhetorical reading, hence (223)b is anomalous. In both of these cases, the difference between the examples with and without *any* could be attributed to a negative implicature. In (222), it is the implicature that the speaker believes the person did not do anything illegal. In (223), it is the implicature that the speaker does not think that John had any fun. The

existential-*even* analysis predicts no such implicature and offers no other explanation for the unacceptability of (223)b. Consider the existential-*even* paraphrase.

(225) If you think John had even the least/most fun, you should have seen Fred!

Rather than being unacceptable, (225) conveys more emphatically the sense of (223)a.

It is a strength of the rational implicature analysis that it does not suffer the faults of the negative implicature approach — it requires no negative implicature or particular structural configuration for licensing —, yet it does predict just the differences seen in (222) and (223). The restriction –**S** does not, cannot, commit the speaker to the belief that there is a choice function of the necessary sort. Hence *any* prevents (222)a from implicating that the speaker believes there is anything illegal in what the person did; such an implication requires that the speaker imply she believes there is a choice function which will select this illegal thing. *Any* also prevents (223)b from being understood in the rhetorical sense. To do so requires the implication that the speaker believes there is a choice function which will select an amount of fun that John had, which is precisely what PS *any* prevents.[39]

6.6 CONCLUSION

In this chapter I have explored the distribution and use of *any*. In certain respects it behaves like the existential quantifier of predicate logic. In other respects it behaves like the universal quantifier. Univocal accounts in terms of either quantifier are therefore inadequate. The rational implicature account I have presented does not treat *any* as a reflex of either quantifier, but rather as an operator introducing a restriction on the choice function over the nominal to which it is appended. This restriction is represented by the

[39] FC *any*, the indiscriminative *any*, does imply that the speaker believes there is a choice function — it implies that she believes the nominal does have some extension; but if the *any* in (223)b is interpreted as

expression –**S**, which indicates that the speaker will not be satisfied by a choice function determined by her own preferences. This has the rational implication that either the speaker does not wish to imply that there is a choice function which will select a referent of the specified sort, or that the speaker will only be satisfied by choice functions determined by someone else's preferences. The effect of the former disjunct is that *any* introduces discourse referents without making any claims as to their discourse-actuality. This gives *any* the sense of an existential quantifier which may only occur within the scope of an irrealis operator. The effect of the latter disjunct is that *any* introduces arbitrary individuals without any exceptions made for the speaker's own preferences, from which one may infer exceptionless universal generalization. This gives *any* the sense of the universal quantifier. The contexts in which *any* does not occur are those which describe a situation as discourse-actual. In such a context there would have to be some function over the extension of the nominal which would choose the discourse-actual individuals, but *any* always leaves open the possibility that there is no such function.

In § 6.5 and to a lesser extent throughout this chapter I have examined the successes and failings of other accounts of *any*. There are uses of *any* which are difficult to explain in accounts which equate *any* with one or the other quantifier of predicate calculus. Among other things, an existential quantifier account fails to predict that *any* will be truly universal in its free choice uses; a universal quantifier account fails to predict that free choice any will have the same distribution as generic existential noun phrases. An account which simply makes *any* polysemous shares the latter failing with a univocal universal account. Purely syntactic accounts fail to predict the extent to which the distribution of *any* is semantically and pragmatically conditioned. Existential-*even* accounts are largely successful, but they incorrectly predict that *any* will have no uses

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indiscriminative, the *any* NP becomes equivalent to *every sort of fun imaginable*, which again prevents the desired interpretation.

which are neutral in degree of emphasis. In § 6.4 I show that the rational implicature account will produce the existential-*even* paraphrase as the paraphrase of *any* noun phrases in many cases. Negative implicature accounts of *any* are successful to a degree, but they overgenerate licensing contexts for *any*. They correctly make some predictions which are missed by existential-*even* accounts. In § 6.5.3.2 I show that the rational implicature account makes these predictions as well.

The shortcoming of the rational implicature approach is that it is not associated with a particular theory of syntax or a well-defined theory of formal semantics. This means it is impossible to address many issues in precise detail. Just what are the syntactic configurations which define irrealis contexts? Why is **anyone wasn't seen by me* different from *I didn't see anyone*? Just how is the meaning of *any* NPs composed with that of the other constituents in the sentence? How does one predict the meaning of *any* in composition with logical operators or operators of modality? This shortcoming does not derive from an inherent failing of the rational implicature approach, however. There is no reason to believe that one could not address all of these issues within this approach, given a particular theory of syntax and formal semantics. In the interest of generality, in this study I will leave these issues unresolved.

Chapter 7: Conclusion

In the preceding six chapter I have developed a rational implicature choice functional account of the (in)definite and (non)specific determiners. According to this account, each of the determiners introduces a restriction to the choice function interpreting the nominal to which they are appended. The basic form of the restriction in every case is that the speaker is or is not satisfied with a choice function determined by the preferences of a particular individual. This individual is either an epistemic agent, the "author", as it were, of some proposition, or the hearer. This defines two dimensions of variation, each having two values. If it is the hearer whose preferences are at issue, the determiner is (in)definite. If it is the epistemic agent whose preferences are at issue, the determiner is (non)specific.

The (in)definite determiners I examined first with respect to a game-theoretical analysis of how one interprets referential noun phrases. The process of assigning/determining the referent is a game of pure coordination which I termed the game of reference. The choices in this game are the members of the extension of the nominal to which one could refer in context (I referred to these individuals in later chapters as the discourse-actual members of the extension of the nominal). Those noun phrases for which the speaker should believe the hearer has a winning strategy in the game of reference are those which she marks as definite; those for which she should not believe that he has a winning strategy, she marks as indefinite. The exceptions to these rules are, for the most part, nouns for which the marking of (in)definiteness could serve no communicative purpose and which are left unmarked. There are exceptions to this last rule, however: in certain instances the speaker marks noun phrases as indefinite though she should believe that the hearer has a winning strategy. One example I used to illustrate this was (27) from chapter 2, which in turn was borrowed from Gundel, Hedberg, & Zacharski (1993).

(27) I met with a student before class. A student came to see me after class as well — in fact it was the same student I had seen before.

In order to give an interpretation to the indefinite article such that (27) would not involve any dishonesty on the part of the speaker, it was necessary to reformulate my analysis of (in)definiteness in the terms of what I have called the choice functional rational implicature account. I represented this with the following notation,

(1) the choice functional rational implicature interpretation of (in)definiteness:

$[\![a\ \mathrm{N}']\!] = f_{-\mathbf{H}}([\![\mathrm{N}']\!])$

$[\![the\ \mathrm{N}']\!] = f_{+\mathbf{H}}([\![\mathrm{N}']\!])$

The variable f ranges over choice functions. Such a function chooses a member of the extension of the nominal in its scope. The subscripted expressions '–**H**' and '+**H**' represent restrictions on the variable f. The former indicates that the speaker would not be satisfied if the choice function were determined by the hearer's preferences; the latter, that she would be satisfied. This account gets the presuppositions of definite noun phrases right as well. If the speaker believes she will be satisfied by a choice function determined by some individual's preferences, this implies she believes a choice function can be defined over the extension of the nominal. This entails that the extension of the nominal is non-null. If she believes the choice function can be defined by the hearer's preferences, this implies that she believes the hearer has a unique description of the referent to which she intends to refer. The principal reason the speaker would believe this is that she believes she has given him a unique description of her intended referent. Thus, the rational implicature account predicts the presuppositions of existence and uniqueness inherent in the definite article. These propositions are presuppositions, they escape negation, because the variable over choice functions is dependent only on its restriction, +**H**.

The second challenge in presenting an analysis of (in)definiteness was to account somehow for those uses of (in)definite noun phrases which do not involve reference to an ostensible individual, the so-called non-referential uses of (in)definiteness. In chapter 3 I examined non-referential (in)definites, considering predicate nominals, generics, and typicality noun phrases. My explanation of these was that certain abstract individuals, roles, typical individuals, and kinds, should be included among the objects in the domain of a linguistic semantic model, and that these non-referential expressions denote such individuals. Predicate nominals involve reference to an instance of an argument category in a relation, something I called a role. Generics involve reference either to kinds or to epistemologically arbitrary individuals. Definite typicality noun phrases involve reference to typical individuals, non-ostensible individuals whose properties are those typical to a set of ostensible individuals. I suggested that typical individuals are akin to kinds, though I did not settle this issue. Indefinite typicality noun phrases refer to arbitrary individuals with properties typical to the set of individuals in question.

To provide an account of *certain* and *any* I extended the model of the choice functional rational implicature account of (in)definiteness. First I developed a particular understanding of specificity: that it involves an epistemic agent's knowledge of the referent of the noun phrase. A specific noun phrase under this understanding can be interpreted by a choice function determined by the speaker's preferences. I then showed that under this understanding *certain* noun phrases are nothing other than specific indefinite noun phrases. The semantics I gave to *certain* is provided in (2).

(2) <u>the choice functional rational implicature interpretation of *certain*</u>:

$[\![\textit{certain}\ \mathrm{N'}]\!] = f_{+s}([\![\mathrm{N'}]\!])$

The advantages of this account of *certain* are that it explains why *certain* induces a presupposition of existence and why it is associated with indefiniteness.

The determiner *any* bears a similarity to the indefinite article. It, too, is existential in many uses, but in those contexts in which the indefinite article has generic reference *any* acts like a universal determiner. The two varieties of account for *any* which are currently most popular are that it is an indefinite determiner which incorporates the scalar pragmatics of *even* and that it is an indiscriminative determiner which refers always to an arbitrary individual. The problem with both these accounts is that they predict that all uses of *any* will be emphatic, and many canonical uses, such as that in example (150) of chapter 6, are not necessarily emphatic at all.

(150) I didn't see anybody.

The choice functional rational implicature account of *any* is given in (3).

(3) <u>the choice functional rational implicature interpretation of *any*</u>:

$[\![\textit{any}\ \mathrm{N'}]\!] = f_{-s}([\![\mathrm{N'}]\!])$

In most cases, this makes *any* an indiscriminative determiner. It also allows that there may be no choice function interpreting the *any* NP, thus permitting non-emphatic uses of *any* as in (150).

The advantage of the choice functional rational implicature account of the non-quantificational determiners, aside from those listed above, is that it unifies their semantics in a common paradigm. In this conclusion, I will not dwell at great length on the aforementioned advantages of my account. I will explore areas into which the rational implicature analysis could be extended, § 7.1. And I will enumerate some of the issues this dissertation leaves unresolved, § 7.2. I will conclude by reiterating the advantages of this analysis, § 7.3.

7.1 EXTENSIONS

As I mentioned in the introduction, the inspiration for my choice-functional rational implicature analysis of the (in)definite and (non)specific determiners was the game-theoretical semantics of Jaakko Hintikka (Hintikka, 1979, 1982, 1986, 1987, 1985; Hintikka & Saarinen, 1975; Hintikka & Carlson, 1977, 1978; Hintikka & Kulas, 1985a,b; Hintikka & Sandu, 1997; Saarinen, 1979; *inter alia*). This theory presents an interesting account of universal determiners. The game rule for universal determiners is that the individual whose goal is the falsification of the sentence replaces them with a constant referring to some individual in their restriction. To take an example, suppose we are discussing a party attended by Aaron, Bette, Celine, Dominique, Eustace, Frank, and George; and suppose I say (4).

(4) Everyone had a good time.

Within the game of verification, the falsifier could take this sentence and replace it with (5), say, or any other sentence in which *everyone* has been replaced by an expression which rigidly designates one of the individuals at the party.

(5) George had a good time.

Because it is in the falsifier's interest to choose an individual for which the assertion is false, if it is possible for him to choose such an individual, he will. If I am willing to assert (4) with foreknowledge that someone may take on the role of the falsifier and replace *everyone* with a counter-example, this implies that I do not believe any such falsifier has a winning strategy in the verification game: if I assert (4), I must believe that no one did not have a good time. The game-theoretical semantics account gets the essential fact right regarding universal determiners. It has other advantages as well. For example, it explains without further stipulation why universal determiners are distributive

in sense: the game rule requires the falsifier to replace the universal noun phrase with an individual. Compare (6)a–c to (6)d.

(6) a. Every boy ate a pizza.

b. Each boy ate a pizza.

c. All the boys ate a pizza.

d. The boys ate a pizza.

Every sentence in (6) makes a generalization about all the boys, namely, that considering them collectively one may truly assert that they ate a pizza. (6)a–c, but not (6)d, may be used to make the stronger claim that each boy individually ate a pizza. (6)a–b must make this stronger claim. (6)c is compatible with the stronger claim and everything else being equal will be understood to assert it.

The game theoretical account of the universal determiners may strike the reader as familiar. It is nothing other than the universal generalization account of indefinite and aphoristic generics and free choice *any*. If the speaker asserts that something may be truthfully predicated of whichever individual someone else chooses, she cannot know for certain which individual this other person will choose. As far as she is concerned, the individual chosen is indeterminate. If she believes that her assertion will prove true, she can only believe this because she believes the predication holds of an indeterminate individual of the type in question. This is just the basis for universal generalization. This suggests that one might be able to provide a rational implicature account of the universal determiners *every*, *each*, and *all*, as well.

The most salient difference between FC *any* and these universal determiners is that only the latter may be contextually restricted. Between the universal and generic noun phrases there is the additional salient difference that only the latter admit exceptions. Furthermore, in the rational implicature analysis of the (in)definite and (non)specific determiners, the choice function assigns an interpretation to the noun

phrase: it selects individuals for which the noun phrase should hold true, not counter-examples. All of these differences suggest a particular rational implicature account of the universal determiners. The (in)definite and (non)specific determiners describe how one associates referents to a noun phrase. The universal determiners presuppose that this is done in some way — this is their oft noted presupposition of existence —, and they describe how one selects counter-examples from this set of referents. The (in)definite and (non)specific determiners describe, in effect, a selection performed by a verifier; the universals describe a selection performed by a falsifier.

Just as we differentiated the (in)definite and (non)specific determiners by individual, namely, the individual verifying, we might differentiate universal determiners by the individual falsifying. There are notable affinities between *each* and *certain*. Both take wide scope with respect to negation. More interestingly, both suggest that the speaker is familiar with the individuals in question. Consider (7).

(7) a. Whoever did this, they all deserve a severe tongue lashing.
b. Whoever did this, every one of them deserves a severe tongue lashing.
c. ?Whoever did this, each one of them deserves a severe tongue lashing.

(8) a. All good boys deserve fudge.
b. Every good boy deserves fudge.
c. ?Each good boy deserves fudge.

In (7), the speaker indicates explicitly that she is not familiar with the person owed a tongue lashing, and *each* is odd. In (8), a universal statement is made regarding good boys, so again the speaker cannot be familiar with all the referents, and again *each* is odd.

If f represents a choice function determined by the preferences of a verifier, let us use g to symbolize a choice function determined by the preferences of a falsifier. The evidence just presented suggests the semantics of *each* might be given by (9).

(9) $[\![\textit{each}\ \text{N}']\!] = g_{+\text{S}}([\![\text{N}']\!])$

g should be a choice function with which the *hearer* must be satisfied, because it is only the hearer who has reason to doubt the honesty of the speaker. Under this analysis *each* means that the hearer would be satisfied by a speaker's efforts to find a counter-example to her own assertion — the speaker believes the hearer could trust her to find a counterexample. Note that a universal determiner could not be interpreted by a falsificational choice function with a restriction of the form –**X**, since this would be compatible with the hearer's not being satisfied with any falsificational choice function, or in other words, with there being a counter-example to the universal generalization. A universal determiner interpreted by a falsificational choice function with a restriction of the form –**X** would not have a universal sense.

A corollary of this analysis of the universal determiners is that if we wish to derive all the variation among the three of them, we must have three individuals which may occur in the restriction of the falsificational choice function. We already have **H** and **S**. Now we need a third individual; call it **A**. This in turn suggests that there is another pair of non-quantificational determiners which the choice functional rational implicature account has missed. This I believe is correct. Consider the determiners *some* and *no*. At first blush it appears that the semantics of the first could be provided by a choice function determinable by someone's preferences; the second, by a choice function determinable by no one's preferences. If at least some choice function can choose a discourse-actual member of the extension of the nominal, then one may replace the *some* noun phrase with a constant referring to this individual while preserving the truth conditions of the utterance. Conversely, if there is no such function, then there is no such individual. This is just how we should wish matters to be in a choice functional interpretation of *some* and *no*: for the *some* NP there is some choice function; for the *no* NP there is no choice

function.[1] What is an individual with preferences capable of determining choice functions of this sort? Let us call it an arbiter. The ideal arbiter for a pair of disputants would produce a decision in the dispute for which neither disputant could suggest an alternative which the other would find more acceptable. Presuming neither disputant could presume to outwit the other — and at the very least neither disputant could have this as a public presumption —, the ideal arbiter would find a counter-example to an assertion should one be findable. This individual would have just the preferences of **A**.[2] We now have three individuals, **S**, the first person, **H**, the second person, and **A**, a third person, an arbiter. With these three individuals one might elaborate a rational implicature analysis for six non-quantificational determiners with verificational choice functions and three universal determiners with falsificational choice functions[3]. Of course, the argument just presented only hints at how this might be done.

One may apply the mechanisms of the rational implicature analysis presented herein still farther, encompassing logical connectives and verbal mood. It was noted in § 6.2.2 that the disjunction operator *or* has a free choice interpretation: it is equivalent to the conjunction operator *and* in just those contexts in which indefinites and aphoristic expressions are interpreted as generic and in which *any* is interpreted as universal. This suggests that *or* should be interpreted via a positive verificational choice function and *and* via a falsificational one. *Or* means, in effect, someone could choose *some* one of the disjuncts for which what is asserted is true.[4] *And* means, what is asserted is true of *all* of

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[1] This account of *some* predicts that *some* will have a presupposition of existence: all choice functions *f* with a restriction of the form +**X** implicate the existence of an individual to be chosen. There is some evidence that the possession of such a presupposition indeed differentiates *some* and *a*.

(i) I didn't see a hat in the closet.

(ii) ?I didn't see some hat in the closet.

[2] For a more thorough examination of the notion of arbiter and a justification for positing it as a linguistically relevant category, see Houghton (1996a).

[3] I conjecture that *every* may be interpreted via a falsificational choice function with the restriction +**S**, *all*, with the restriction +**A**. I will not explore or defend this proposal.

[4] This is just a loose paraphrase. Among other things, it fails to take into account speech acts other than assertion.

the conjuncts. To complete the paradigm, one might analyze *not* as corresponding to the putative non-quantificational determiner *no*: what is asserted is true of no "junct". This analysis of the logical connectives requires us to address just what the choice functions would have as their domain. They might be metalinguistic, ranging over the *expressions* disjoined, conjoined, or negated. This hypothesis is to be dispreferred because the logical connectives, like other linguistic operators, appear to have both metalinguistic and non-metalinguistic uses.

(10) Fred either [mænɪd͡ʒ]ed or [mænəd͡ʒ]ed to solve the problem, he didn't [mĩjənɪd͡ʒ] to solve it.

On the metalinguistic interpretation, (10) might or might not be true. On the non-metalinguistic interpretation, it is a contradiction. If the logical connectives are interpretable as denoting non-metalinguistic choice functions, then every syntactic constituent must denote a member of a class of entities in the domain of a choice function. Providing a semantics which could support such an analysis of the logical connectives is not a trivial matter. I will not attempt it here.

Another pattern which suggests a rational implicature analysis is the parallelism between *any* and subjunctive verb forms. Because subjunctive forms are difficult to identify unambiguously in English and are of relatively limited use, I will consider subjunctive forms in Spanish (in the examples, licensing contexts are underlined and subjunctive forms are in small capitals; I have taken most of the examples and their English glosses from Colbert, 1975). The Spanish subjunctive occurs,

i) <u>in the complements of negative verbs</u>

(11) Niego <u>que Marta lo TENGA</u>.
I deny that Marta has it.

(12) No es cierto que mi tía ESTÉ aquí.

It isn't true that my aunt is here.

Compare this to the occurrence of *any* within the scope of negation.

ii) in the complements of predicates expressing doubt or uncertainty

(13) Dudamos que VENGAN esta noche.

We doubt that they'll come tonight.

Compare this to the occurrence of *any* in the complement of negative verbs.

iii) in the antecedent of a counterfactual conditional[5]

(14) Si FUÉRAMOS ricos, estaríamos siempre de viaje.

If we were rich, we would always be traveling.

(15) Llegarían a tiempo si TOMARAN el avión.

They would arrive on time if they took the plane.

Compare this to the occurrence of *any* in the antecedent of conditionals.

iv) in the modifier of a superlative or universal

(16) París es la ciudad más bonita que yo CONOZCA.

Paris is the most beautiful city I know.

(17) Dondequiera que él VAYA, yo voy.

Wherever he goes, I go. [D.H.]

[5] The subjunctive optionally may occur in the consequent of counterfactual conditionals as well. See the discussion of the non-occurrence of *any* in the consequent of counterfactual conditionals in § 6.4.3.

Compare this to the occurrence of *any* in restrictive relatives modifying universal noun phrases and in standards of comparison. Note also that the present subjunctive verb *quiera* meaning "you may want" is fossilized into certain universally quantifying expressions.

(18)	quienquiera, quienesquiera	whoever, anyone, anybody
	cualquier, cualquiera	whatever, whichever
	cualesquier, cualesquiera	whatever, whichever
	cuandoquiera	whenever
	comoquiera	however
	dondequiera	wherever

These would seem derived from expressions literally granting the hearer free choice in assigning a referent to a referring expression.

The Spanish subjunctive is also used,

v) <u>in descriptions of indeterminate entities</u>

(19) Busco <u>un hotel que no ESTÉ muy lejos</u>.
I am looking for a hotel not too far away.

(20) No tiene <u>ningún amigo que le SEA fiel</u>.
He (she) hasn't a faithful friend.

(21) ¿Conoce usted a <u>alguien que PUEDA ayudarme</u>?
Do you know anybody who could help me?

Compare this to the free choice uses of *any*.

In almost all cases a subjunctive clause describes a situation of a particular type rather than a particular situation. When both the subjunctive and the indicative are possible, the indicative describes a specific event and the subjunctive, a non-specific one.

vi) The subjunctive describes non-specific events.

(22) Saldremos aunque LLUEVA.

We'll go out even though it may rain.

(23) Saldremos aunque llueve. [indicative form]

We'll go out even though it is raining.

There is at least one construction in which the subjunctive might be understood as describing a specific event: the complement of an appreciative verb.

(24) Celebramos que APRUEBES el curso.

We are happy that you are passing the course.

Compare this to the occurrence of *any* in the complement of appreciative verbs, where the *any* noun phrase may be understood as referring to a specific individual.

(25) I'm glad ANYONE looked at our poster. (the small capitals here indicate stress)

Finally, the Spanish subjunctive may be used to make a more polite assertion than the equivalent assertion with the indicative.

vii) The subjunctive connotes a greater degree of politeness than the indicative.

(26) a. QUISIERA ir con usted.

I would like to go with you.

b. Quiero ir con usted. [D.H.]

I want to go with you.

(27) a. ¿PUDIERA usted esperar un momento?

Could you wait a moment?

b. ¿Puede usted esperar un momento? [D.H.]

Can you wait a moment?

Compare this to the contrast between *any* and *some* in questions and commands.

(28) a. Can I do anything for you?

b. Can I do something for you?

(29) a. Do anything.

b. Do something.

Again, this strong parallelism between one of the (non)specific determiners and a verbal inflectional category suggests that the two should have parallel semantics. This would require the interpretation of subjunctive inflection as introducing the restriction **–S** to a choice function over situations or events. One imagines that any semantic model that provided entities to be selected by choice functions interpreting the logical connectives would provide the entities to be selected by this verbal choice function as well, since the logical connectives connect sentences and verb phrases as well as noun phrases. A rational implicature account of the subjunctive making it equivalent to *any* would lead one to expect verbal categories corresponding to the other choice functional determiners. I will not follow this line of speculation any further, however.

7.2 LOOSE ENDS

All of what I have just described are areas into which the rational implicature analysis may be extended. In addition to these there are areas into which the analysis must be extended if it is ever to supplant longer-established theories. There are aspects of nominal semantics which have a part to play in the usage of the (in)definite and (non)specific determiners but which I have largely ignored. The mass/count distinction is one. In chapter 2 I gave an argument for why one should expect mass nouns to be referred to with bare nominals or definite noun phrases. I have not discussed why one finds *certain*

only with countable nouns, however, or why countable *any* noun phrases tend to have a free choice interpretation and mass *any* noun phrases, a polarity sensitive one (Tovena, 1998). Rational implicature is a topic which deserves to be studied in its own right. How do rational implicatures project from simple clauses to complex clauses of which the former are constituents? What exactly is the relationship of rational implicatures to other forms of inference? Could the rational implicature account of the existence and uniqueness presuppositions of definite noun phrases be applied to other presuppositional phenomena, such as pronouns and factive verbs? Finally, I have ignored altogether generalized quantifier theory. It is not at all obvious how the analyses of the non-quantificational determiners that I have given could be synthesized with an analysis of *two*, *several*, or *most*, yet some synthesis must be possible: determiners from both sets can modify noun phrases which can serve as the arguments of the same verb. I will set these issues aside, however. The answers to these questions will have to await further research.

7.3 ADVANTAGES OF THE RATIONAL IMPLICATURE ACCOUNT

I will not argue my case any longer. I leave it to the reader to determine whether my argument has succeeded. The chief goal I mean to have achieved in this dissertation is a unified account of the meaning of the non-quantificational determiners, be this meaning semantic or pragmatic. If I have achieved this goal, I have achieved a number of other goals as well. First, the meaning assigned to each determiner is monosemous. Some words are polysemous, but I have striven to show that the non-quantificational determiners aren't. If my argument toward that end has been successful, I have achieved my second subsidiary goal. In doing so, I will have also achieved my third subsidiary goal: a thorough description of the use of the non-quantificational determiners. I don't know whether this qualifies as a subsidiary goal or a sub-subsidiary goal, but I consider it an advantage of the rational implicature account that it produces the presuppositions

associated with the definite article and *certain*. One advantage of the rational implicature account is more abstract but I believe no less valuable: in order to give my monosemous accounts, I have had to posit only two parameters of variation. A more parsimonious account of four expressions could not be hoped for.

If it is judged that I have fallen short of my more extravagant aims, I believe there will be two outcomes of this dissertation of lasting value. I have provided a thorough description of the non-quantificational determiners and the constructions with which they are associated. And I have demonstrated a form of analysis which I believe has much potential: the rational implicature choice functional approach.

CONVENTIONS OF THIS DISSERTATION

Acceptability judgments

I use more or less standard prefix notation to indicate degrees of acceptability. For the most part, I only make three distinctions:

I need a big red book.

?I need a red big book.

*I need a specific certain book.

The lack of any overt notation indicates, unless I say otherwise, that I regard the discourse as fully acceptable. '?' indicates that I regard the discourse as not fully acceptable. '*' indicates that I regard the discourse as only marginally acceptable or as unacceptable. These notations do not indicate anything about my judgment as to the source of the unacceptability. The one exception to this is the symbol '#'. This indicates that I regard the unacceptability of a certain discourse as arising from pragmatic or semantic anomaly, not ungrammaticality.

A: I met Sally at the co-op.

B:#So was Franklin, I believe.

Formal semantic notation

I adopt the following general notation for semantic representations.

i) Variables and arbitrary constants denoting individuals or sets in the domain of a semantic model are in italics.

A, B, C, a, b, c, X, Y, Z, x, y, z

Characters denoting constants will tend to be taken from the beginning of the alphabet, variables, from the end. Capital letters will signify sets; lowercase, individuals. Unless I say otherwise, the characters *i* and *u* will designate the speaker and the hearer in a speech act, respectively. Similarly, if there is an individual named Mary, she will be denoted by the character *m*, Bill, by the character *b*, and generally the lowercase italic character corresponding to the first letter in a proper name will be used as a constant denoting the referent of that name.

ii) Arbitrary saturated predicates will be denoted with lowercase Greek characters.

$\alpha, \beta, \gamma, \phi$

iii) Variables and arbitrary constants denoting participants in a speech act are in bold capitals.

S, **H**, **X**

iv) Quantifiers and saturated predicates are enclosed in parentheses.

$(\forall x)(\phi)$

The scope of an operator is the expression inside the parentheses immediately to its right. In the example above, $(\forall x)$ is considered an operator and its scope is ϕ.

v) The order of arguments and predicate in an expression denoting a saturated predicate mirrors their order in English.

(*x* sleep), (*i* see *u*)

vi) Epistemic predicates are treated as operators over their propositional argument. The scope of an epistemic predicate is indicated with square brackets.

(i know)[(u see i)]

vii) Restricted quantifiers are represented as (Qx: p), where Q is some quantifier, x is the variable bound, and p is the restriction on the domain quantified over. I may represent the restriction as a predicate or as a set.

viii) The symbols f and g represent choice functions. Choice functions are defined in § 1.2.

ix) That a choice function has a particular restriction is denoted by a subscripted expression denoting that restriction.

f_R

Many of these notational conventions are explained in greater detail in those sections of the text in which they are first used. I have adopted this notation for perspicuity. I myself find it somewhat easier to understand (1) than (2), the same expression in a more conventional notation.

(1) ($\forall x$: cat)(x mammal)

(2) $\forall x$[cat(x) $\rightarrow$ mammal(x)]

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