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The Logic of Exception

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1. Universals and Quasi-Universals.

It seems to be a property of every natural language that it can express universally quantified statements. The need for making universal claims must be deeply ingrained in human nature, even though we realize they are seldom true. Sometimes this lack of truth is taken as a hint to the hearer to restrict his domain of interpretation in a suitable manner, guided by general pragmatic principles. So, for example, the statement "I can see everybody quite well from here" is usually understood not to pertain to the speaker. In other cases the speaker fulfills this task herself by indicating that the universal applies with certain restrictions, for instance by hedging the quantifier with *almost* or *nearly* or by mentioning exceptions. Such statements I will refer to here as *quasi-universals*. The study of quasi-universals has been largely ignored in semantic theories, mainly, I take it, because until recently semantic theories of quantification were concerned primarily with predicate logic and had nothing to offer for the analysis of the vastly more complex quantificational systems of natural languages. With the arrival of generalized quantifier theory and discourse representation theory, we now have more complete descriptive coverage and the beginnings of an explanatory account. This paper explores the properties of a particular kind of quasi-universals, viz. universals with qualified exceptions. The proposals offered here should be viewed as tentative rather than definitive and are intended to broaden the range of problems which an adequate theory of natural language quantification should cover.

Exceptions to universally quantified statements can be stated in several ways in English. The statement in (1a) is qualified differently in (1b) and (1c):

(1) a. Every day it was raining.
b. Every day but Sunday it was raining.
c. Every day except Sunday it was raining.

In this paper, I give a compositional semantics for exception-phrases introduced by either *but* or *except (for)*. As a matter of fact, there are more expressions in English which serve the same general purpose, including the archaic *save*, and locutions like *not counting X*, *with the exception of Y*, *barring Z* etc. However, they do not appear to behave significantly different from *except for*.

Any account of exception-phrases in English must take into consideration the differences in distribution and cooccurrence restrictions between *but* and *except*. In what follows, I will only be concerned with the use of *but* as a marker of exception, and ignore the *but* of contrastive conjunction, as well as the *but* found in such examples as *But for your help, I would not have made it.*. Simplifying somewhat, we can observe that *but* seems to be restricted to the PP-position inside universally quantified NPs, whereas *except*-PPs occur there, as well as in any position where sentential modifiers may occur, such as the sentence-initial position, the sentence-final and the VP-initial position. In addition to (1c), for instance, we have:

(1) d. Except for Sunday, it was raining every day.
e. It was, except for Sunday, raining every day.
f. It was raining every day, except for Sunday.

Another important difference between *but* and *except* is the fact that *except* is not necessarily linked to a universal NP, as the examples in (2-3) purport to show:

(2) a. Except for June, car sales were down from last year.
b. Except for the car, your possessions have no value.
c. Except for today, I'm all booked this week.
(3) a. #Car sales were down from last year but June.
b. #Your possessions but the car have no value.
c. #I'm all booked this week but today.

As a matter of fact, it is necessary here to distinguish between to kinds of *except*-PPs: free PPs like the ones in (2) above, and connected PPs which serve as postmodifiers in NPs, such as the one in example (1c). The latter do not cooccur with definite articles, whereas the former do:

(4) a. Every student except for Stan has left.
b. Every student, except for Stan, has left.
c.#The students except for Stan have left.
d. The students, except for Stan, have left.
e.#My students except for Alvin are all female.
f. My students, except for Alvin, are all female.

The main distinction, then, that emerges is the one between free and connected exception phrases. Connected exception phrases are strictly associated with universal determiners, in particular *every*, *all* and *no* (i.e. roughly the class of quantifiers which can be modified by *almost*[1]), whereas free exception-phrases apply to certain kinds of propositions, namely those that express, in one way or another, a universal statement. This is most evident in cases of hidden universal quantification, such as donkey-sentences, in which there is no overt universal quantifier for the PPs to be linked to:

(5) a. If a farmer owns a donkey, he's sure to beat it, except for Pedro, who is a Buddhist.
b. If a farmer owns a donkey, he will beat it, except when the donkey is a pet.

Another observation related to this is that connected exception-phrases behave differently with regard to *wh*-words than do free ones. As noted by Horn and Bayer (1984), (5c) has to be understood as a rethorical question stating indirectly that nobody but a total idiot would say a thing like that. On the other hand, when *who* cannot be paraphrased as *nobody* and the question is not meant to be rhetorical, *but*-phrases are not acceptable, as (5d) makes clear.

(5) c. Who but a total idiot would say a thing like that?
d. #Who but John is coming to the party?

Free exception-phrases, on the other hand, are fine with real questions as the example in (5e) below shows. As Fred Landman pointed out to me, in all of these cases the exception phrases is equivalent to a *besides* phrase, a meaning which it Dutch couterpart *behalve* often has in other constructions as well (cf. Landman and Moerdijk 1980).

(5) e. Except for John, who is coming to the party?

The interaction of exception-phrases with questions is not too surprising, given the quantificational natural of *wh*-questions (cf. for instance the theory of questions in Higginbotham and May 1981). Exception phrases are a good test for quantificational structures and clearly distinguish for instance wh-questions from relative clauses, even though the latter are structurally very similar in English, cp. the following contrast:

(5) f. Who except for John left drunk before midnight?
g. *Everybody who except for John left before midnight was drunk.

Relative pronouns, unlike question pronouns, simply are not quantifiers, and this makes sentences such as (5g) unacceptable. When the exception phrase seems to occur at the end of the relative clause, as in (5h) below, the sentence is fine, but here we may safely assume that the exception phrase is in construction with the whole noun phrase, and does not really belong to the relative clause at all:

(5) h. Everybody who left before midnight, except for John, was drunk.

To return to (5c), it is not entirely clear to me why *but* gives rise to a rhetorical interpretation. This observation does not appear to follow directly from the semantics given below. The status of rhetorical questions is an interesting one, also with regard to the analysis of negative polarity items (Ladusaw 1979), but a thorough investigation of their properties is beyond the scope of this paper.

2. Connected Exception-Phrases.

2.1. Determiner- vs. NP-Modification. For a compositional analysis of connected exception phrases, only two possibilities seem plausible: Either the connected phrase modifies a noun phrase, or else it is part of a complex discontinuous determiner. A third possibility, viz. that the exception phrase modifies the common noun, is not plausible, since that offers no clear way of restricting such modifiers to universally quantified expressions. For instance, we could say that in *every student but Jim*, the predicate *student* is modified by *but Jim* and denotes the set of students minus Jim. The quantifier *every* is restricted to that set. However, this would work equally fine for such ungrammatical NPs as **some student but John* or **many a student but John*. So if we want to rule such expressions out semantically, it will be necessary to combine the exception phrase to the determiner, or else to the quantified NP.

If we treat connected exception-phrases as NP modifiers, another problem arises. The NPs with which an exception-phrase can combine form a natural semantic class, but this natural class cannot be defined in terms of denotations only. The NPs *three students* and *all students* have the same denotation in situations where the number of students is three, yet even then only the latter noun phrase can be modified by *but me*. This problem can be overcome when we look at the denotation in all situations, but this is an unnecessary complication. An extensional semantics can be maintained if we consider *but me* as part of the determiner. In other words, *all .. but me* could be viewed as a discontinuous determiner. This may also appear plausible given the existence of a related construction involving the combination of a *all*, *but* and a numeral, as in *all but three of the students*, which is best analyzed as a complex determiner. This kind of analysis is obviously not compatible with theories of syntax such as GPSG that have no place for discontinuous

constituents. Nevertheless, it has in fact been proposed recently in Keenan and Stavi's (1986) paper on determiners. It is of course also reminiscent of some theories of relative clauses proposed in the early days of generative grammar (see e.g. Stockwell, Schachter and Partee 1973 for an overview). The extensionality-argument is not entirely convincing, because it will be necessary to give a nonextensional account for free exception phrases in any case. In the case of relative clauses and prepositional phrases, a standard argument against treating them as part of the determiner is the fact that they can modify conjoined NPs, as in *the man and the woman in the blue T-bird* or *a father and a son who quarreled constantly*. In the case of *but*-phrases, this argument is a little harder to make. For example, in *every man and every woman but X*, the modifier is more likely to be construed with the second conjunct than with the whole conjunction. Hence the garden-path effect in a noun phrase like *every man and every woman but John*. However, I trust that a noun phrase like *every man and every woman but John and Mary* is sufficiently acceptable to warrant pursuing the possibility of interpreting connected exception-phrases as NP-modifiers. This will also make it easier to treat cases like *none but the brave deserve the fair*, where the exception phrase modifies a pronominal NP. The other approach forces one to analyze *none* into *no + one*, which may be historically correct, but has little basis in synchronic syntactic evidence. I begin with a semantic analysis of conncected exception-phrases based on the assumption that they are part of the determiner, and then proceed to give a more complex semantics which assumes that they are NP-modifiers.

2.2. Semantics for DET .. but NP. In order to characterize the meaning of connected exception phrases, a word must be said about the semantic interpretation of determiners. Following some work on generalized quantifier theory (Zwarts 1983, Van Benthem 1986), I define determiner meanings as functions Q which assign to a domain of quantification E a binary relation Q_E between subsets of E. (In what follows, the domain subscript will be dropped.) The relations expressed by the universal determiners *every* and *no* are defined as follows:

(6) *Every*AB iff $A \subseteq B$
*No*AB iff $A \cap B = \emptyset$

These relations have the properties of left-downward monotonicity and left additivity, and share with other determiner-interpretations the property of conservativity:

(7) *Left Downward Monotonicity*
QAB and $A' \subseteq A$ imply QA'B

Left Additivity
QAB and QA'B imply Q($A \cup A'$)B

Conservativity
QAB implies QA($A \cap B$)

Left additive quantifiers are called "uniting" in Van Benthem (1984: 457). Van Benthem notes (in his theorem 4.4.4, p. 458) that on the nonempty sets, the only quantifiers satisfying some broad constraints which are both left-downward monotone and uniting are *every* (and its synonyms) and *no*. These two properties, then, characterize formally the class of determiners we are interested in here. For example, the determiner *neither* is semantically related to *no*, but cannot be modified by a *but*-clause. Cp. the ungrammaticality of (8):

(8) Neither man but Tim was pleased.

This seemingly odd fact follows directly from our characterization, since *neither* does not have the properties of left-downward monotonicity and left-additivity, because "neither A is a B" presupposes that the cardinality of ||All is 2. Hence "neither A is a B" does not entail "neither A' is a B" whenever A' denotes a proper subset of the denotation of A, nor can we conclude from "neither A is a B" and "neither A' is a B" that "neither A or A' is a B", again because of the cardinality presupposition.

Another fact of some interest is the unacceptability of connected exception phrases with *not all*, as in **not all men but Tim*. This follows as a corollary of the present account if *not all* is analyzed as a complex determiner (as in Hoeksema 1986a, for completely independent reasons), because the complement of *all* is neither left-downward monotone nor left-additive. If, on the other hand, *not* is treated as a NP-modifier, as some would have it, it is not clear why it cannot combine with the perfectly acceptable expression *all men but Tim*.

The semantic interpretation of connected exception phrases can be stated as follows:

(9) QAB *but* c $=_{df}$ Q(A-{c})B and c $\notin$ B, for any left-downward monotone and left-additive Q, and undefined for all other Q.

This definition is not entirely correct, because it only deals with those cases with the exception-marker applies to a referring term. However, exception phrases with quantificational arguments appear to be somewhat odd (cf. ??no student but every undergraduate, ?every student except for every female one), and anyway a proper extension of the above definition to quantificational arguments is straightforward.[2] Note that the definition does not require that c be a member of A. In other words, the truth-conditions for a sentence like *All students but Jim were straight* do not require that Jim be a student. That seems to be an obvious Gricean implicature, since the exception clause would otherwise be vacuous. Note also that the implicature is not cancelled by negation, and hence it is not an entailment. In this respect the interpretation defined above differs from the one given in Keenan and Stavi (1986: 281). According to these authors, *All students but Jim were straight* would be true just in case Jim is the only student who is not straight. Formally:

(10) *every ... but Jim* A B iff {j} = A $\cap$ E-B

Hence in their semantics, it is logically entailed that Jim is a student. If we treat that as an implicature, we can explain why the question *Is every student but Jim straight?* seems to presuppose that Jim is a student. It would be certainly be very odd to answer that question with *No, Jim is not a student.*

Keenan and Stavi note that *every .. but Jim* denotes a conservative function under their definition. This raises the question whether our definition makes *Q .. but c* conservative for any Q and c. If we require that primitive determiners, such as the ones that *but*-phrases operate on, have the property of right-continuity (cf. Thijsse 1983, van Benthem 1986), then indeed it follows that complex determiners of the form *Q .. but c* are conservative relations according to our semantic definition, given that Q is conservative. To see this, just note that QAB but c = Q(A-{c})B = Q(A-{c})(B$\cap$ (A-{c})) (by conservativity of Q). Given Q(A-{c})B and Q(A-{c})(B$\cap$ (A-{c})), we derive Q(A-{c})(B$\cap$ A) by right-continuity. This in turn equals QA(B$\cap$ A) but c, which is what we wanted to show.

After some hesitation, I decided to add to clause c $\notin$ B to def. (9). So from *All students but Jim are straight*, it may be concluded that Jim is not straight. This is treated as a logical entailment here, even though we could also give a Gricean account. After all, if Jim were straight, then by left-additivity we conclude that all students are straight. The exception phrase would be redundant in that case. The implicature arises from the assumption of non-redundancy. While the status of the inference as logical entailment or Gricean implicature is not easy to resolve, the account given here has at least the advantage that it differentiates between such pairs of statements as:

(11) a. #Every even number but 2 is an even number.
b. #Every even number but 3 is an even number.

The first sentence has the mild oddness of a logical contradiction, whereas the second one denies something it seems to presuppose. To the extent that such sentences are felt to be odd in different ways, the present account seems plausible. Note that for Keenan and Stavi (1986) both sentences are straightforward contradictions.

2.3. NP-modification. In this section, the above semantics is reformulated to accomodate the possibility that connected exception-phrases are NP-modifiers. It has been indicated before that this makes it necessary to go intensional. The interpretation of a noun phrase Det Nom is defined as the image of ||Nom|| under the relation ||Det||. Thus, if ||Det|| = Q, and ||Nom|| = A, then ||Det Nom|| = Q[A] = {X| QAX}. To narrow down the class of noun phrases to which *but*-phrases apply, we can require that they have two model-theoretic properties which reflect the monotonicity and additivity requirements given before:

(12) *Closure under submodels.*
Let E' $\subseteq$ E, and X $\subseteq$ $||NP||_E$, then X$\cap$ E' $\subseteq$ $||NP||_{E'}$.

Additivity
If (X$\cap$ E) $\subseteq$ $||NP||_E$ and (X$\cap$ E') $\subseteq$ $||NP||_{E'}$,
then X$\cap$(E$\cup$ E') $\subseteq$ $||NP||_{E\cup E'}$

Note in particular that the first requirement entails that the quantified sentence is true at the empty model. This rules out all kinds of existential quantifiers, referring expressions, etc., while the additivity requirement will rule out quantifiers like *at most seven students*, which may hold true of a predicate at two models without holding true of that predicate at the union of these models. Another fact to note is that these two properties are preserved under boolean meets, so that conjunctions of NPs which have these two properties will also have them. This accounts for the observation that connected exception-phrases may combine with conjunctions of universally quantified noun phrases.

The interpretation of connected exception-phrases can now be stated thus:

(13) $||NP \text{ but } c||_E = \{X \subseteq E: X\text{-}\{||c||\} \in ||NP||_{E\text{-}\{||c||\}}$ and
$X \notin ||NP||_E\}$

The consequences of this definition for the two main cases, NPs beginning with *all* and NPs beginning with *no*, are as follows: while *all X* denotes the set of Xs supersets, *all X but c* denotes

the set of all supersets of X from which c has been subtracted. Likewise *no X* denotes the set of all sets not overlapping with X, and *no X but c* the result of adding c to every set in that collection. Hence a sentence like *All students but Jim are straight* still entails under the new semantics that Jim is not straight, whereas *No students but Jim are straight* entails that Jim is not straight.

3. Free Exception-Phrases.

3.1. *Except* + **Universals** For the semantics of free exception-phrases, it is prefectly obvious that a simple extensional, which is to say truth-functional, approach is not possible. This comes as no surprise, given that there really do not seem to be any truth-functional sentential operators. Even negation, the standard example, has recently been reallocated to the predicate operators (Horn 1987, following a rather long line of logicians beginning with Aristotle), and clear cases of sentence operators, such as the adverbials *certainly* and *possibly*, are all obviously intensional in nature. In interpreting free exception phrases, we must seek to capture the notion "universal sentence" which appears to be the crucial one in defining the kind of sentences which have such phrases. As a first approximation, let us consider the conditions of additivity and closure under submodels mentioned earlier. However, the situation is more complex here, because mixed universal/existential sentences can also be modified by free exception-phrases, at least when the universal quantifier has wide scope:

(14) a. Except for John, every student has a car.
b. There is a seat for every guest, except for you.

Clearly, such sentences do not have to be true at submodels of models they are true at. Take a model of a situation where every student has a car, remove the cars from its universe, and we have a submodel where the sentence is obviously false. We have also seen that free exception-phrases can be used in sentences with definite descriptions, which are universals with existential import. Rather interestingly, there appears to be a constraint against existential/universal sentences (sentences where the existential quantifier has scope over the universal quantifier) with preposed exception-phrases. For instance, the following cases are bad:

(15) a. #Except for this Cadillac, somebody damaged every car.
b. #Except for you, a friend of mine called everybody an idiot.
c. #Except for Mark, a professor left messages for every student.
d. #Except for Lily, I sometimes detest all my siblings.

In (15d), a temporal existential quantifier is used instead of an existential noun phrase. Though the effect is perhaps weaker, this sentence is clearly less acceptable than the corresponding sentence without *sometimes*. Note that these examples are fine when the exception-phrase is extraposed:

(16) a. Somebody damaged every car, except for this Cadillac.
b. A friend of mine called everybody an idiot, except for you.
c. A professor left messages for every student, except for Mark.
d. I sometimes detest all my siblings, except for Lily.

It is rather difficult to make sense of these facts. Perhaps the most obvious way out would be to

claim that so-called free exception-phrases are actually not free, but must occur under the scope of a universal quantifier. Exception-phrases in initial position are c-commanded by the subject position, but not by the direct object position, according to such studies as Reinhart (1983). Hence the ungrammaticality of the examples in (15). Unfortunately, this is not going to work. Sentences similar to the ones in (15), but with a different kind of subject, are much better, even with a deeply embedded universal quantifier:

(17) a. Except for your uncle, I don't trust any doctor.
b. Except for the bubonic plague, I think it is reasonable to say that I've treated just about every disease you could name.
c. Except for 1963, I don't think he has ever filed income tax.
d. Except for Judy, John dislikes all of his classmates.

Next, consider an analysis in terms of some level of logical form along the lines of certain theories of scopal ambiguities which invoke a rule of Quantifier Raising (such as the theory in May 1985). Some initial motivation for such an analysis might come from the phenomenon of "inverse linking". This phenomenon is discussed at length in the work of May, and its defining characteristic is a quantifier in a modifier of a noun phrase having wide scope over the main determiner of that noun phrase. A typical example is: *On our trip we saw a little bit of every city*. As Fred Landman pointed out to me, free exception phrases are acceptable in such cases: cf. *Except for Amsterdam, a representative from every city attended the conference*, or *Except for Jones, I read the dossier of every member of this department*. However, a Quantifier-Raising theory, or similarly, a theory which employs a rule of Quantifying-In (such as Montague 1973), is not likely to shed much light on the matter. The reason is that such a theory always allows for a wide scope reading for the downstairs quantifier. Hence it must predict that the sentences in (15) are acceptable on that reading. In fact this is not the case, since no such reading is available. Perhaps the most promising solution to the problem is arrived at when we impose the following purely semantic (that is, model-theoretic) condition on the propositions to which free exception-phrases can apply:

(18) *Additivity:*
$\|$except NP S$\|_E$ is defined only when the following holds for $\|S\|$:
$\|S\|_E = 1$ and $\|S\|_{E'} = 1$, then $\|S\|_{E \cup E'} = 1$.

This closure-condition is obviously related to the additivity requirement for connected exception-phrases and rules out combination of free exception-phrases with mixed $\exists\forall$ quantification, since they lack this closure-property. To give a simple example, if somebody is touring every city in Canada and somebody is touring every city in the US, it does not follow that somebody is touring every city in North America, the union of Canada and the US. Interestingly, mixed $\forall\exists$ quantification does have the additivity property. So if 'every student has a car' is true in the US and 'every student has a car' is true in Canada, then 'every student has a car' is true in North America. The acceptability of the examples in (16) must be due to scope factors. If the existential quantifier has scope over the exception-phrase, then the exception-phrase modifies a sentence with a variable in it, so to speak, which behaves semantically like a name. And therefore the sentences in (16) are more similar to the ones in (17), which have names instead of indefinite noun phrases, than they are to the sentences in (15), with regard to the additivity property. Names, it should be noted, are like universal quantifiers in this respect. For instance, from 'John visits every city in the US' and 'John visits every city in Canada' we conclude that John visits every city in North America. Again, we have additivity.

It is natural, given the discussion so far, to define the interpretation of free exception phrases in the

following way:

(19) ||Except a S||$_E$ = True iff ||S||$_{E-\{||all||\}}$ = True, ||S||$_E$ = False and S is additive.

As we saw in the case of connected exception-phrases, falsehood of S could also be treated as a pragmatic implicature, arising from the desire to use exception phrases only in a nonvacuous manner. I do not opt for that possibility here, in order to keep the semantics of free and connected exception phrases as uniform as possible. However, a possible argument for the alternative can be based on the existence of modal exception-phrases, such as the one in (20):

(20) Except possibly for John, everybody is having a good time.

Here we want no entailment that the sentence modified by the exception-phrase is false. However, it seems clear that the modal operator *possibly* has scope over more than just the PP *for John*. Therefore it is not clear that such entailments would indeed arise, once we have worked out the semantics of modal exception-phrases. Since the matter is rather complicated, I must delegate it to some future occasion.

The semantics given here explains why purely existential sentences do not combine with free exception-phrases. Because pure existential sentences are true of all extensions of a model in which they are true, exception phrases are by definition superfluous, and hence ruled out by the pragmatic principle alluded to above. When there is mixed universal/existential quantification, closure under extensions does not hold, hence exception phrases are relevant.

Lest it be thought that only properties of quantifiers are relevant to the distribution of exception-phrases, I should point out that other factors, such as the semantic properties of embedding verbs, also come into play. For instance, the examples in (17) may be contrasted with the following:

(21) a. #Except for your uncle, I regret that I did not see any doctor.
b. #Except for the bubonic plague, I deny that I have treated just about every disease in the book.
c. #Except for 1963, John is amazed by the fact that he got fatter every year.

In these cases, which look like the ones in (17) as far as the quantifier structure is concerned, the factive verbs effectively block off the exception-phrase from the downstairs universal quantifiers. It can also be noted that these sentences are fine when the exception phrase is placed at the end. In that case it is possible to interpret it as part of the embedded clause, under the scope of the embedding verb. The reason for the oddness of the examples in (21) can be explained as follows. Unlike propositional attitude verbs, the above factive verbs do not allow the quantifiers within their complements to have wide scope. Hence (21a), for instance, says that I am in the regret-relation to the proposition that I did not see any doctor, in a domain which is properly restricted so as to exclude the uncle of the hearer. However, that proposition will not change if we add the hearer's uncle to the domain of discussion, under a proper intensional construal of the notion 'proposition'. (Of course, the truth- value of the proposition may well change, but not the proposition itself.) The exception-phrase, then, serves no purpose in each of the above cases, which is why they are odd.

The additivity condition, which rules out $\exists\forall$ quantification, seems a rather natural one to impose, but it may not be sufficient to explain the full range of data. For instance, $\forall\exists\forall$ quantification does not have the additivity property. Yet sentences exhibiting this pattern of quantification are perfectly acceptable with free exception-phrases:

(22) a. Except for Karl, every professor gave a lecture for all students.
b. Except for me, everybody knows somebody who knows everybody.
c. Except for the cook, nobody has a reason to hurt everybody.

Rather than dropping the requirement, I suggest that perhaps additivity is not computed all the way through. Suppose only the outermost layers of quantifiers are considered. This makes sense if we ascribe some computational reality to the condition, even though, at this point, it is little more than handwaving. If it is so, then for example $\forall\exists\forall\Phi$ is treated as $\forall\exists\Pi$.

3.2. Definite Descriptions. Unlike connected exception-phrases, free ones can modify sentences with definite descriptions instead of universally quantified noun phrases. However, there are certain constraints and restrictions on when this modification is possible. For example, it is not normally possible to do this with singular definite descriptions, as the distinction between the following two examples indicates:

(23) a. Except for Harry, I do not like the boys in my class.
b. Except for the first three, these sentences are bad.
c. Except for you, the students are rather uninterested.
(24) a. #Except for Harry, I do not like the boy in my class.
b. #Except for that one, this sentence is bad.
b. #Except for you, the student is rather uninterested.

However, this is not the whole story. In copula constructions, there is a distinction between *the* and *the only*:

(25) a. Except for Richard, I am the only realtor here.
b.#Except for Richard, I am the realtor here.
(26) a. Except for Margaret, the only realtor is Richard.
b.#Except for Margaret, the realtor is Richard.

Note that there is no difference, according to some semantic theories, between the interpretation of *the realtor* and that of *the only realtor*. Such theories, then, like Montague's (1973) adaptation of Russell's theory, lack the sophistication to handle such cases.

It seems to me that *the only* is more of a quantifier than *the*. In particular, it appears that while exception phrases limit the domain of quantification, they do not limit the domain of entities from which definite descriptions may pick their referents. This explains, for instance, why in a sentence like

(27) Except for Reagan himself, nobody thinks that the President works to hard.

the quantifier *nobody* is limited so as not to range over Reagan as well, while the definite description is free to pick up Reagan as its referent. Hence the oddness of (25b): to understand that sentence correctly, we must assume there are two realtors, Richard and me, yet the definite description presupposes that there is only one. *The only*, on the other hand, behaves like a quantifier, and so it applies to a properly restricted domain.

Superlatives like *the best* pattern with *the only*, and may be associated with exception phrases as well:

(28) a. Except for Harry, Dick is the best friend you ever had.
b. Except for myself, you are the most degenerate of men.

Superlatives and *the only* behave in more ways like *all* and *no*. In particular, they can trigger, just like these quantifiers, negative polarity items in relative clauses, such as *ever* in (28a). This sentence is ungrammatical when the superlative *best* is omitted.[3] Again it seems best to maintain that superlatives like quantifiers and *the only* are context-sensitive in a way in which definite descriptions are not. In this respect they pattern not with quantificational expressions, but with pronominals, which can refer also back to the object of *except*, as in:

(29) a. Except for Joe himself, nobody likes his car
b. Except for myself, I like everybody
c. Except for the men themselves, nobody gave them a chance

In theories such as Discourse Representation Theory, of course, it is not hard to see how this kind of fact should be handled. Pronouns and definite descriptions are treated as nonquantificational and depend for their interpretation not on the regular interpretation function, but rather on something more like the valuation functions of the semantics of predicate logic.

4. Problems and Prospects.

There are several problems involving the logic of exception which have not been touched upon yet. Some appear to be rather straightforward, such as the integretation of temporal semantics into the present framework. Clearly, we need to allow for such sentences as

(30) a. Except for Saturday evening, Bob is free.
b. It always rains here, except when it snows.
c. Except for weddings, he never drinks.

Now, instead of restricting E, the domain of entities, we restrict T, the set of times at which we evaluate sentences.

In the case of generic sentences, the situation is more complex. Bare plurals, for instance, can give rise to exception phrases:

(31) a. Except for the Bible, we don't read books around here.

b. Except for koalas, bears can be dangerous.
c. Except in Holland, unemployment figures are going down.
d. Except for bats, mammals don't fly.

Such cases are difficult to deal with in nonquantificational theories of bare plurals, such as Carlson's (1978) framework. Carlson points out many paralellisms between bare plurals and proper nouns, and suggests that the former are referring expressions, which refer, however, not to individuals but to kinds. In the interaction of bare plurals with exception phrases, however, we note an important difference with names, because the latter do not normally give rise to exception phrases, except for temporal and locational ones in habitual sentences:

(32) a. Bob smokes, except in the car.
b. Bob doesn't smoke, except after dinner.

These cases can be dealt with, presumably, in terms of some hidden quantification over situations. This is not possible in the case of the examples in (31), except for (31c).

Another interesting matter concerns the differences due to collective versus distributive readings. While sentences with clearcut distributive readings allow modification by free exception-phrases, similar sentences with collective readings do not:

(33) a. Except for Jim, the men were content.
b. Except for Lynne, we all have cars.
c. Except for Eve, they slept a long time.

(34) a. #Except for Jim, the men were not numerous.
b. #Except for Lynne, we lifted the stone (on coll. reading)
c. #Except for Eve, they met in the lobby.

It is not hard to see why we find this distinction in acceptability. After all, it seems natural to paraphrase the examples in (33) with overt universal quantifiers, using *all of the men*, *all of us* and *all of them* instead of the actual subjects of (33). Such a paraphrase is not possible in the cases in (34). So informally, this state of affairs makes sense. What is harder to understand is that the plural definite descriptions and pronouns seem to be properly restricted in a way which we said was not possible for singular definite descriptions and pronouns. How come? I suggest that this is just apparent, having to do with the particular way in which distributive predicates give rise to universal quantification. Suppose we add a distributivity operator, along the lines of Link (1986) and Roberts (1987), to mark distributive readings of predicates. This operator can be defined here as follows:

(35) $\|{}^*P(X)\|_E := \forall x \in E: x \in X \rightarrow P(x)$

Note that we have made the universal quantification sensitive to the domain of quantification, which is restricted by the use of exception-phrases, even if X itself does not depend on that particular domain. This makes the analysis compatible with our earlier observations about definite descriptions.

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FOOTNOTES.

1. As a matter of fact, English *almost* is not a perfect example since it can also select certain large numerals, such as *one hundred*. A better case is the similar Dutch expression *vrijwel*, which only selects the Dutch counterparts of *all*, and *no*. Cf. Zwarts 1985 for some discussion.

2. Let G be a principal filter, then QAB *except* G is true iff Q(A-∩ G)B & -(QAB). A noun phrase denotation QA is a principal filter generated by A just in case for all B: QAB iff A ⊆ B. Principal filters are universal quantifiers and ultrafilters (Montague's individual sublimations). Referring terms denote ultrafilters after type-raising (Partee and Rooth 1983). (It can be shown that the definition given here yields the same interpretations for exception phrases with type-raised referring terms as the one in the main text does for simple referring terms.) Quantifiers which are not principal filters seem bad in exception phrases: for instance, *all students but nobody* is awful. Other expressions, such as *at most seven red ones*, which are not principal filters in generalized quantifier theory, should be considered referring terms, since they can be antecedents for discourse pronouns. Hence it comes as no big surprise that they may appear in exception clauses, cp. *all marbles except for at most seven red ones.*

3. For some discussion of these polarity facts, cf. Hoeksema (1986b).

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