Coreference and Bound Anaphora: A Restatement of the Facts

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Introduction

Reinhart (1983) argues for a system of anaphora in which the grammar only represents the bound-variable interpretation; anaphora involving 'coreference' is taken out of the grammar, under her account. In the present paper I want to argue that anaphora should be brought back into the grammar, and I want to suggest that the role of 'coreference' in descriptions of anaphora should be very much restricted, if not completely eliminated. In fact, I believe that it is correct to eliminate it, and to understand the term 'anaphora' as relating *only* to those instances where some anaphoric element is supplied with a grammatical antecedent. My position is thus the opposite of Reinhart's in the sense that I shall argue that *all* anaphora is represented in the grammar (though not necessarily in the syntax). The kind of system of anaphora that I will argue for is of exactly the same nature as that proposed in Roberts (1985), which carries over many of Reinhart's ideas, while augmenting the grammar with a level of discourse anaphora; however, one point argued for by Roberts and carried over here is that syntactic indexing has no (necessarily) uniform semantic interpretation. The present paper is intended to show that not only is the Roberts-style system a viable alternative to the direct-interpretation approach of Reinhart, but also that it is superior in that the Reinhart system is incapable of dealing with a systematic set of facts.

The ambiguity of an example like (1) has often been taken to indicate that a pronoun may either be interpreted as a bound-variable with respect to its antecedent, or be coreferential with it.

(1)   Bill thinks he is smart and Max does too.

I will argue here that the non-sloppy interpretation in many such cases indicates that there is a third possible semantic interpretation, which I will call the 'cospecificational' interpretation.[1] The presence of this new antecedent-anaphor relation

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[1] I borrow this term from Sidner (1984), though I use it in a different way.

calls for a rethinking of the whole range of data to which the bound-variable vs. coreferential distinction has been shown to be relevant. I will use the Discourse Representation Structures proposed by Kamp (1984) to illustrate some of the examples of the cospecificational binding (which in some cases has been mistaken for variable-binding) and I will discuss the structural conditions under which it may arise; they roughly coincide with the conditions for 'indirect binding' given in Haïk (1984), though not exactly.

1. Cospecificational Anaphora

1.1. Restrictive vs. Non-Restrictive Relative Clauses

Following Sells (1985), I take it that the restrictive/non-restrictive distinction in relative clauses is not one of a bound-variable vs. referential interpretation, as has commonly been supposed, but rather bound-variable vs. cospecificational. This is motivated by such data as that in (2).

(2) a. Each car has (exactly) two doors which open only from the outside.

     b. Each car has (exactly) two doors, which open only from the outside.

(The *exactly* perhaps makes things clearer.) In (2)a the relative pronoun is bound as a variable, predicting the right truth-conditions; there may in fact be more doors than two. In (2)b the truth-conditions are different, in that (b) means that each car has two and a maximum of two doors. This contrast must be bound-variable vs. cospecificational: the relative pronoun could not be referential in (b), for its antecedent is under the scope of a quantifier. The latter example, then, has the cospecificational interpretation, which enforces the 'maximality' without enforcing reference; this is dubbed the 'E-type' interpretation by Evans (1980), and I will argue here that it is rather more pervasive than has been previously acknowledged, even by Evans. It applies as we will see, to any kind of pronominal anaphora, including anaphora with reflexives, and even in modifier-noun constructions. Restrictive and non-restrictive relative clauses simply represent grammaticalizations of either one of the two interpretations normally available to any anaphoric element.

There is some debate as to whether this 'maximality' in the interpretation is a semantic or a pragmatic effect.[2] I shall remain somewhat agnostic on that point here, for a decision either way is compatible with what I have to say. All that is important is that we have evidence for the third interpretation, the one I call the cospecificational interpretation; the 'maximality' effect is often a good diagnostic for that interpretation, and I shall use it as such.

My primary concern in this paper is to motivate the cospecificational anaphora; I believe it is inescapable for non-restrictive relative clauses. Some more examples are given in (3). In each, the antecedent for the *wh*-phrase is under the scope of some higher operator and hence is non-referential, yet the non-restrictive clause is again perfectly acceptable:

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[2] For discussion, see Heim (1982, Ch. 1), Rooth (1985).

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(3) a. Every chess set comes with a spare pawn, which you will find taped to the top of the box.

b. Every rice-grower in Korea owns a wooden cart, which he uses when he harvests the crop.

c. Every new student is assigned a tutor, who is responsible for the student's well-being in college.

It seems in fact that there is no general constraint on the nature of the head of a non-restrictive relative; Janet Fodor has suggested to me the example (4):

(4)   A tutor will register each student, who is then responsible for getting his papers to the Dean's office on time.

Here the quantifier phrase *each student* is directly the antecedent of the non-restrictive relative pronoun, yet clearly a bound-variable interpretation would be inappropriate. The only kind of quantified NP not available for cospecificational anaphora is *no N* (as noted by Evans); NPs with *no* cannot appear in non-restrictive clauses.

The non-restrictive clause must plainly be in the scope of *each* in (4); more generally, the non-restrictive clause must be in the scope of the higher operator, to allow the anaphora in the examples in (2)b–(4). This is clear in an example like (5):
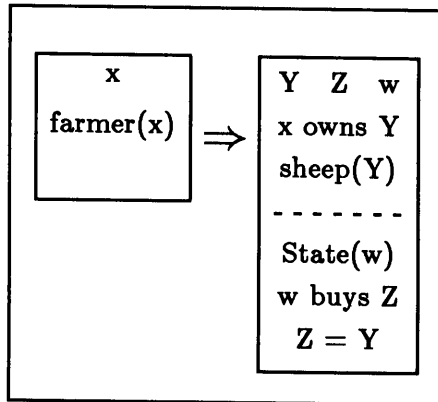
(5)   Every farmer$_i$ in Macedonia owns two donkeys, which serve him$_i$ well.

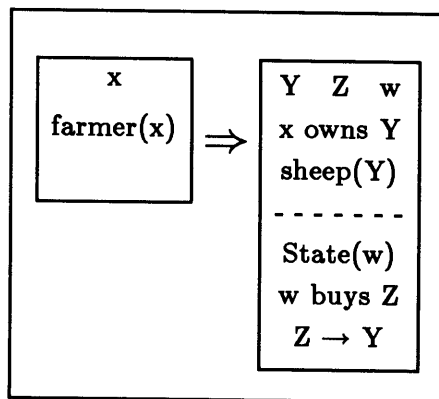Here the set of things that "serve him well" will vary, from farmer to farmer.

The upshot of all this is that we cannot distinguish restrictive and non-restrictive clauses in terms of scope differences; and in the general case, reference will not help either. Given that there is no (necessary) scopal distinction between the two cases, it follows that the *only* difference between the restrictive and non-restrictive readings lies in a different anaphoric link in each case. Some sample Discourse Representation Structures (DRSs) are shown in (6) and (7); '=' indicates the bound-variable (restrictive) anaphoric link, and '→' indicates the cospecificational (non-restrictive) link.[3] The dotted lines simply indicate the contribution of the relative clause in each case, and have no theoretical significance; capital letters indicate reference markers for plurals.

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[3] The notation '=' is assigned the same truth-conditions as two instances of the same variable would be; in Sells, Zaenen and Zec (1985) it is shown that it is necessary to keep these two representations distinct, even though they are semantically equivalent. My '=' and '→' correspond to Roberts' 'c-command binding' and 'discourse binding', respectively.

(6)   Each farmer owns some sheep which the State buys in the Spring.

```
+-------------------------------------------------+
|                                                 |
|  +-----------------+      +------------------+   |
|  |       x         |      |  Y   Z   w       |   |
|  |                 |      |  x owns Y        |   |
|  |   farmer(x)     |  =>  |  sheep(Y)        |   |
|  |                 |      |  - - - - - - -   |   |
|  +-----------------+      |  State(w)        |   |
|                           |  w buys Z        |   |
|                           |  Z = Y           |   |
|                           +------------------+   |
+-------------------------------------------------+
```

(7)   Each farmer owns some sheep, which the State buys in the Spring.

```
+-------------------------------------------------+
|                                                 |
|  +-----------------+      +------------------+   |
|  |       x         |      |  Y   Z   w       |   |
|  |                 |      |  x owns Y        |   |
|  |   farmer(x)     |  =>  |  sheep(Y)        |   |
|  |                 |      |  - - - - - - -   |   |
|  +-----------------+      |  State(w)        |   |
|                           |  w buys Z        |   |
|                           |  Z → Y           |   |
|                           +------------------+   |
+-------------------------------------------------+
```

1.2. Truth Conditions

The main idea of the truth-conditional difference between restrictive and non-restrictive relative clauses given in Sells (1985) (i.e., the difference between bound-variable and cospecificational anaphora) is that the former involves intersection while the latter involves the subset relation. For our purposes here, we can state the interpretation of the cospecificational link in the informal way given in (8).

(8)   The interpretation of '$\beta \to \alpha$' is that, relative to a true assignment for α, β and α pick out identical sets.

This is no different in essence from what Evans has.[4] In the examples in (2), repeated here, each interpretation will be relative to some particular choice of car,

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[4] As noted above, cospecificational anaphora is unavailable if the antecedent is *no N*; we would want this to follow from the interaction of the interpretation of the anaphoric link and the interpretation of *no*, which requires that there be no true assignments for α in (8).

i.e., will be preceded by "For each car...".

(2) a. Each car has two doors which open only from the outside.

    b. Each car has two doors, which open only from the outside.

Details aside, what is most important is that the antecedent in the case of cospecification is 'identified' independently of the non-restrictive clause; this is, I presume, uncontroversial, and is what gives rise to the 'maximality effect'.

Even with quantified NPs, this maximality still show up; consider the truth-conditions for (4), which will say that for each choice of student, a tutor will register that student, and then that that student is responsible for getting to the Dean's office. The idea of the 'cospecificational' anaphora is that in each case there is a 'specific' entity to which pronouns may refer.

2. More Examples

I believe that the relative clause cases show that we must posit two kinds of anaphora, bound-variable and cospecificational anaphora. Now, we might ask whether this is confined to relative clauses; I shall argue that it is not, and rather that there is a systematic ambiguity in all kinds of anaphora. Therefore, I now move to examples with other kinds of anaphoric element that again demonstrate the availability of an anaphoric link that is neither bound-variable nor referential.

2.1. Pronouns

The availability of the cospecificational interpretation with ordinary pronouns is seen in the example in (9):

(9) With each new Hollywood hit, the lead actress thinks she is the new Monroe, and the director does too.

This example allows for a 'non-sloppy' interpretation, but that cannot be attributed to any reference of the pronoun *she*, as the antecedent is under the scope of a (universal) quantifier, and hence cannot refer. To reiterate, the idea of the cospecificational interpretation is that the truth-conditions go case-by-case and that, in each case, there is a specific entity to which pronouns refer back and which persists within the scope of the higher quantifier. Grossly put, the truth-conditions assigned to the cospecificational binding allow the antecedent in the examples in (9) to have scope over the entire conjoined sentence while remaining within the scope of the adverbial universal quantifier.

We can get the idea of these two different interpretations in the schematic IL translations of (9) in (10), assuming the 'Derived Verb-Phrase Rule' analysis proposed by Partee (1973) and adopted by Reinhart.
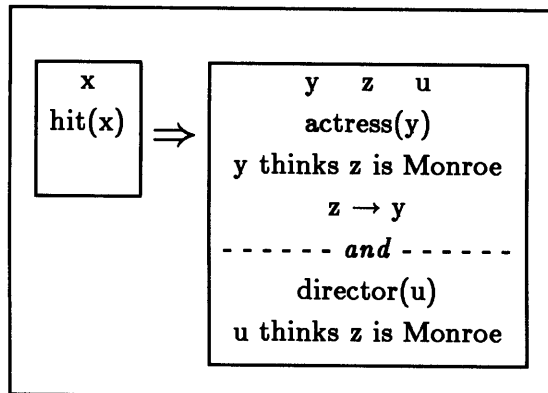
(10) a. Sloppy
$$\forall x[\text{hit}(x) \rightarrow \exists y[\text{actress}(y) \land \lambda z[z \text{ thinks } z \text{ is Monroe}](y)]$$
$$\land \exists u[\text{director}(u) \land \lambda z[z \text{ thinks } z \text{ is Monroe}](u)]]$$

    b. Non-Sloppy
$$\forall x[\text{hit}(x) \rightarrow \exists y[\text{actress}(y) \land \lambda z[z \text{ thinks } y \text{ is Monroe}](y)]$$
$$\land \exists u[\text{director}(u) \land \lambda z[z \text{ thinks } y \text{ is Monroe}](u)]]$$

Here the interpretation (b) is the one of interest; on Reinhart's account the y variable inside the derived verb-phrase (the $\lambda z \dots$ expression) is not bound within that verb-phrase and hence should only refer. However, the interpretation that the example allows is that y is indeed bound, by something outside of the verb-phrase (namely, $\exists y$). Yet in the IL expression in (10)b, this y is actually free, for the scope of $\exists y$ is bounded by the end of the first line of the translation.

If we move to a non-quantificational account of (in)definites, there is no longer a problem as the scope of the definite is now the scope of the (yet higher) universal, correctly allowing the intended interpretation (hence Roberts' reinterpretation of Reinhart does not have a problem here). In (11) I give the DRS representation in my notation for the non-sloppy reading. Sells, Zaenen and Zec (1985) present a specific account of how the different kinds of anaphoric link interact with the interpretation of VP-Ellipsis and Comparatives to give the sloppy and non-sloppy readings. The anaphoric link with '=' always leads to the sloppy reading.

(11)   With every hit, the actress thinks she is Monroe and the director does too.

$$
\boxed{\;\boxed{\begin{array}{c} \mathbf{x} \\ \mathrm{hit}(x) \end{array}} \;\Rightarrow\; \boxed{\begin{array}{c} y \quad z \quad u \\ \mathrm{actress}(y) \\ y \text{ thinks } z \text{ is Monroe} \\ z \to y \\ \text{- - - - - - } and \text{ - - - - - -} \\ \mathrm{director}(u) \\ u \text{ thinks } z \text{ is Monroe} \end{array}}\;}
$$

Other examples of the availability of the cospecificational anaphora with pronouns are given in (12):

(12) a. On most opening nights, the cast rate their performance worse than the audience (do).

b. Most beekeepers want a Queen that will look after her workers by feeding them, if the drones will not.

c. In each state, some marijuana growers will destroy their crop, or else the local DEA people will.

d. Some kitten in every litter hopes that her owner will keep her, and her mother does too.

Now if we really have cospecification here, we might expect the find the 'maximality' effect showing up, due to the fact that the pronoun is identified 'independently' of its antecedent. I think that this is so, though the judgements are not easy. Consider (12)c; with *some* unstressed, and with the non-sloppy interpretation, I believe that the natural interpretation is that there are marijuana growers in each state and that all will get their crops destroyed, one way or another. If cospecificational

COREFERENCE AND BOUND ANAPHORA

anaphora is present, this is what we would expect. This is in constrast to the interpretation where *some* is stressed, when the interpretation seems to be that only SOME (sic) growers in each state will lose their crops. As this is the bound-variable interpretation, one would expect the example to be ungrammatical on the non-sloppy reading. I believe that this is so, i.e., that stressing *some* only permits the sloppy reading.
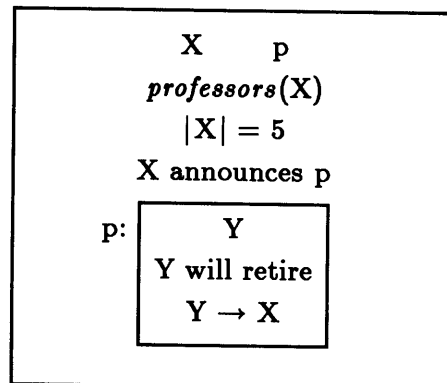
Consider now the examples in (13).

(13) a. Each year, only five professors announce that they will retire.

    b. Each year, only five professors announce that they will retire, and the Dean confirms it.

Here, it seems to me that (13)a has only a sloppy interpretation, while (13)b favors the non-sloppy interpretation. Moreover, it seems that (13)a can be used felicitously in a context where actually ten professors retire each year (by stressing *announce*), while (13)b cannot. Rather, in the latter case, it seems that only five professors in toto retire each year.

Rooth (1985) suggests that, in cases of anaphora, the head noun of the antecedent phrase has a special role to play in determining the truth-conditions of the whole sentence. This may be related to the observations here. In the case of the examples in (13), the maximality effect in the non-sloppy reading would seem to arise as we identify a group of five professors, and then say certain other things about that group. I suggest then, that in such cases of anaphora, where the antecedent and pronoun are in the same clause, that only the head noun of the antecedent NP restricts the set which satisfies that NP. In the DRS shown in (14) it would seem only 'simple' conditions on the antecedent X (italicized) will figure in the determination of the set that satisfies it; this means we will pick out a set of five things that are professors, irrespective of what they announce, or anything else that they might do, for that matter.

(14)   Five professors announce that they will retire.

$$
\begin{array}{|l|}
\hline
\quad\quad X \quad\quad p \\
professors(X) \\
\quad |X| = 5 \\
\quad X \text{ announces } p \\
\\
p: \begin{array}{|c|}
\hline
Y \\
Y \text{ will retire} \\
Y \to X \\
\hline
\end{array} \\
\\
\hline
\end{array}
$$

2.2. Reflexives

We see similarly in (15)–(17) that reflexives can allow for the cospecificational interpretation:

(15)   With each new Broadway hit, the lead actor thinks that pictures of himself should be in the Village Voice, and the publicity manager does too.

(16)   Maria is less critical of herself than Maxine (is).

(17)   Graduation pictures of himself are odious to any student, but not to his
         father.

Examples with comparatives are perhaps the clearest cases in English. In the little
discourse in (18), two examples involving reflexive pronouns appear, and the context
is biased to favor the non-bound-variable interpretation.

(18)   If your dog gets into a fight, just let it be. For statistics show that, in
         practically every case, a dog defends itself better than its owners. On the
         other hand, dust your dog with powder regularly, for it is rare that a dog
         can keep fleas off itself better than its owners.

Both of these examples have an interpretation in which the owners do something
not to themselves, but to their dog. But in neither case is reference involved; this
confirms that the ambiguity is between variable-binding and cospecification. This
is critical, for if the non-sloppy interpretation of a reflexive were due to reference,
then in such cases the reflexive would have no linguistically specified antecedent on
Reinhart's account, though the presence of such an antecedent is usually taken as
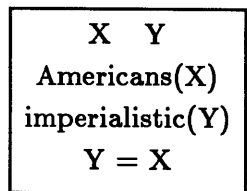criterial of the difference between reflexive and 'regular' pronouns.

In fact, on the assumption that in a GB-style syntax the reflexive pronoun will
be coindexed with its antecedent, in order to characterize syntactic constraints on
the distribution of the reflexive (such as that its antecedent must be in the minimal
Governing Category, etc.), it is clear that the reflexive will be coindexed with an
antecedent no matter whether it gets a sloppy or a non-sloppy interpretation: the
syntactic distribution of the reflexive is the same in either case. This brings us
to something important, for it shows that Reinhart is wrong in assuming that
coindexing in syntax always leads to bound-variable anaphora; rather, the correct
statement is that coindexing in syntax always leads to some kind of anaphora, where
we exclude pure coreference from the domain of anaphora.[5]

2.3. Prenominal Modifiers

We have seen in the previous section that the syntactic conditions under which we
get the two kinds of anaphora may be identical. Let us suppose that we indicate
anaphora by coindexing in the syntax and that we choose a new reference marker
(variable) for each token of the index, relating tokens by one of the two anaphoric
links. Then for something like (19) we correctly predict the two DRSs (20) and
(21), which represent the restrictive and non-restrictive readings of the phrase.

(19)   the imperialistic$_i$ Americans$_i$

(20)   Restrictive

$$
\begin{array}{|l|}
\hline
\text{X \quad Y} \\
\text{Americans(X)} \\
\text{imperialistic(Y)} \\
\text{Y = X} \\
\hline
\end{array}
$$

---

[5] Cf. Roberts on the 'anti-anaphora' found in Dogrib (Saxon (1984)).

(21)   Non-Restrictive

```
┌─────────────────────┐
│      X   Y          │
│   Americans(X)      │
│   imperialistic(Y)  │
│      Y → X          │
└─────────────────────┘
```

This kind of example again indicates that there really is an ambiguity of anaphora, which is independent of such relations as relative scope and/or syntactic c-command.

3. Structural Conditions on Anaphora

3.1. Bound Variable Interpretation

I think that it is possible to maintain the claim that the bound-variable interpretation appears only when the antecedent c-commands the pronoun, as suggested by Evans and by Reinhart (1983) (though it may be more appropriate to express the command relation in terms of lexical argument-structure rather than phrase structure representations).[6] In each of the (b) examples below, the indefinite does not c-command the pronoun, and seems to get only the 'maximal' interpretation indicative of cospecification.

(22) a.   Each grower planted some marijuana seeds which he hoped would grow quickly.

   b.   Each grower planted some marijuana seeds and hoped that they would grow quickly.

(23) a.   Each professor told some students$_i$ that they$_i$ would be expelled.

   b.   Each professor who flunked some students$_i$ hoped that they$_i$ would be expelled.

3.2. Cospecificational Interpretation

I would like to suggest that apparent counterexamples to the c-command condition on bound-variable anaphora have been misanalyzed, and are really examples of cospecification.[7] We know that it is possible for a quantified NP to participate directly in cospecificational anaphora, given the grammaticality of (4). Examples like (24)a have been offered as counterexamples to the c-command restriction on bound anaphora.

(24) a.   Someone in every city$_i$ hates its$_i$ climate.

   b.   Each woman with some cats$_i$ hates their$_i$ wailing.

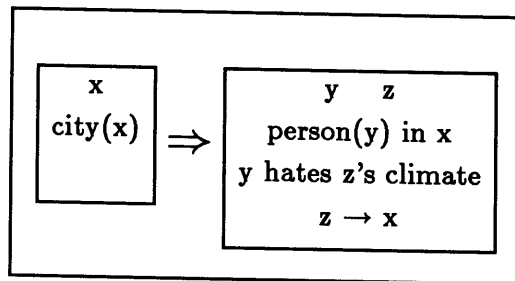[6]   As argued, for example, in Bach and Partee (1980).

[7]   May (1985) comes to a similar conclusion, i.e., that non-c-commanding anaphora is not true bound-variable anaphora.

However, we see in (24)b that the anaphoric link here is one of cospecification, as *some cats* is interpreted as maximal with respect to each woman. That would suggest that the position of *every city* in (24)a is also one where the anaphora is of the cospecificational kind, though various lexical factors that I do not understand seem to be involved in the examples in (24), and the parallelism may not be compellingly strong. However, note also the unacceptability of (25)a, with *no*—we know independently that this determiner does not license cospecificational anaphora; (25)b shows that the problem is not one of scope, as *no living President* may have wide scope.

(25) a. *A picture of no living President$_i$ has ever pleased his$_i$ family.

    b. A picture of no living President has ever appeared in this journal.

The DRS for (24)a is shown in (26), with cospecificational anaphora.

(26)   Someone in every city$_i$ hates its$_i$ climate.

$$
\boxed{
\begin{array}{c}
\boxed{\begin{array}{c} x \\ city(x) \end{array}} \Rightarrow
\boxed{\begin{array}{c} y \quad z \\ person(y) \text{ in } x \\ y \text{ hates } z\text{'s climate} \\ z \rightarrow x \end{array}}
\end{array}
}
$$

As another example, the cospecifying relation is the one we find in 'donkey-sentences', as can be seen in the contrast in (27):

(27) a. On each farm, some donkeys think they are underfed.

    b. Every farmer who owns some donkeys beats them.

In (a) the pronoun may be a bound-variable, and the interpretation allows the possibility that some other donkeys on each farm are satisfied with their food. On the other hand, in (b), we have the maximality concomitant with the cospecificational relation, in that the example says that each farmer beats all of his donkeys, though again there is no reference.

3.3. Cospecification Encompasses 'Indirect Binding'

What I am calling cospecification is very similar to what Haïk calls 'Indirect Binding', though I believe there are some differences, as I will outline. The idea of indirect binding is that some NP indirectly binds a pronoun just in case the NP is in the scope of something else which does bind (i.e., c-command) the pronoun. This is, for donkey sentences, effectively a syntactic version of Kamp's or Heim's analysis.

In inter-clausal cases of anaphora, Haïk suggests that the anaphoric link from the scoping NP must be preserved in order for indirect binding to be possible, as seen in the contrast in (28).

(28) a. *[Some men who owned a donkey$_j$]$_i$ liked it$_j$, but it$_j$ bit them$_i$.

    b. [Some men who owned a donkey$_j$]$_i$ liked it$_j$, but they$_i$ did not feed it$_j$ well.

The idea is that in (28)b, the *they* indirectly binds the second *it*, preserving the indirect binding relations from the first clause. On the other hand, the structural configuration for indirect binding in the second clause of example (28)a is not met, and so the example is bad as *a donkey* cannot indirectly bind the second *it*.

However, I believe that the notion of scope that is relevant in these cases must be stated in a level of Discourse Structure, as argued in Sells (1985), for it is simply not the case that it is binding by quantificational NPs alone that induces scope (Haïk notes this too, in the conclusion to her paper). For instance, both of the examples in (29) appear to have the same structure as (28)a, yet both are acceptable. It is clear that in (29)a the presence of the *then* indicates that the second clause is 'under the scope of' (i.e., interpreted relative to) the first.

(29) a.   [Some men who owned a donkey$_j$]$_i$ liked it$_j$, but then it$_j$ bit them$_i$.

     b.   [Some men who owned a donkey$_j$]$_i$ liked it$_j$, and it$_j$ liked them$_i$.

It seems that what is going on in examples like (29)a is that the explicit temporal anaphora dictates the structure of the Discourse Representation in such a way as to allow the configuration under which the nominal anaphora is possible. Similar cases involving temporal anaphora are shown in (30), and again the nominal anaphora is available too.[8]

(30) a.   Every Russian farmer who has a tractor$_i$ uses it$_i$ in the Spring. This is the only time when the gas for it$_i$ is cheap enough.

     b.   Most Californian fisherman use a metal-hulled boat$_i$. Usually, it$_i$ has been passed from father to son.

Though these few examples are only suggestive, I conclude that the cospecificational anaphora is available just in case the antecedent is accessible in the Discourse Structure, where accessibility is effectively a command relation defined on Discourse Structures (for more detailed discussion, see Sells (1985)).

3.4. Coreference

As far as I can tell, the availability of the cospecificational link means that we never need to appeal to actual reference in our descriptions of anaphora. In each case of supposed 'coreference' there will be an alternative analysis in terms of cospecificational anaphora, though in the case of singular referring terms, these will be truth-conditionally indistinguishable.

What now about constraints on coreference, such as Disjoint Reference constraints? Let us adopt the formulation in (31).

(31)   Co-arguments of the same predicate cannot be anaphorically linked (unless expressed with a reflexive).

A typical example that suggests that such a Disjoint Reference rule is too strong is the following:

(32)   Who does John$_i$ like? He$_i$ likes John.

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[8] See Partee (1984) for a discussion of temporal anaphora with the DRS framework.

With coreference construed as a kind of anaphora, then the acceptability of the second sentence is a problem for a theory with a Disjoint Reference rule. In the terms I am arguing for here, though, the only anaphora in (32) is that indicated by the coindexing; the fact that the subject and object of *likes* end up referring to the same object is not a problem, as we only have a kind of 'Disjoint Anaphora' rule. The pragmatic side of this is not, as Reinhart has it, "use bound variable anaphora rather than coreference anaphora", but rather, "use anaphora"; that is, if you use a pronoun, you should try to supply a (linguistic) antecedent for it. In all these cases where the local Disjoint Reference condition is violated, there is no grammatical specification of the anaphora, on my account; this is, I believe, correct, and also tells us why we must have certain other conditions obtaining (such as a preceding discourse or a special context): as the speaker fails to "use anaphora", the hearer has no way of figuring out what the pronoun refers to, so that information must be supplied independently.

4. Summary

In summary, I have proposed that all cases of anaphora should be brought into the grammar, which, in the terms I have used here means "represented in the DRS". I have suggested that there are two kinds of anaphora represented in DRSs, bound-variable anaphora and cospecificational anaphora. The former is defined only in a subset of the environments where the latter is defined, as summarized in (33):

(33) a.   The bound-variable interpretation is available only if the antecedent c-commands the pronoun. ("syntactic accessibility")

b.   The cospecificational interpretation is available only if the antecedent is *accessible* in the discourse.

c.   The coreferential interpretation is available, but seldom used; the pragmatic strategy is "use anaphora, if you can".

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