Deixis and anaphora [final version]

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I. Towards unification

Uses of pronouns

It is well known that pronouns have a number of distinct uses, which fall under three major headings: free uses, bound uses, and anaphoric uses. Consider the sentence

(1)   John loves his mother.

The possessive pronoun 'his' can refer back to John (anaphoric use), or to some other person who turns out to be salient in the conversational context (free use). As a result, (1) says either that John loves his own mother, or that he loves that person's mother. We get a bound use if we embed the sentence in a quantificational context, as in

(2)   Every boy is such that John loves his mother.

This sentence is susceptible to both of the uses mentioned above: 'his mother' can still refer to John's own mother, or to the mother of someone else who turns out to be salient in the conversational context. But the most likely understanding of the pronoun in (2) corresponds to a third type of use, in which the mother at stake is not a single individual but, for every boy, the mother of that boy. This is the bound use, characterized by the fact that the value of the pronoun varies with the individuals introduced by the

quantifier.[1] The bound use is similar to the anaphoric use, since in both cases there is a linguistic expression ('John' or 'every boy') which intuitively serves as 'antecedent' for the pronoun. When the antecedent is a quantifier, however, the pronoun is not assigned a definite value but a course of values.

The three types of use can be represented by indexing the pronoun and its possible antecedents. In bound uses, the pronoun will be co-indexed with an antecedent quantifier; in anaphoric uses, it will be co-indexed with a referring expression; in the absence of co-indexing, the pronoun will be understood as 'free'. The three readings for (2) can be spelled out as follows:

Bound use:
Every boy$_{(i)}$ is such that John$_{(j)}$ loves his$_{(i)}$ mother.
Anaphoric use:
Every boy$_{(i)}$ is such that John$_{(j)}$ loves his$_{(j)}$ mother.
Free use:
Every boy$_{(i)}$ is such that John$_{(j)}$ loves his$_{(k)}$ mother.

Of course, not every pronominal expression tolerates the three uses. For example, the first person pronoun 'I' is always free: except perhaps in a few exceptional cases, its referent comes from the context. At the opposite end of the spectrum, reflexive (and logophoric) pronouns are often described as not tolerating free uses. Still, it is unlikely that the pronouns which allow for the three types of use are merely ambiguous: the phenomenon is too systematic to count as a crude ambiguity. There obviously is something in common to the different uses — something which we must attempt to capture within a unified framework.

Anaphoric and bound uses

The first thing we notice when we attempt to unify the various uses is that pronouns are like variables in logic. Variables are not ambiguous, yet they have two uses: they can be bound by quantifiers, or they can remain free, depending on the syntactic environment in which they occur. With pronouns the situation is similar. A pronoun can be bound by a quantifier or it can be contextually assigned a value. Such a contextual assignment is what I call a 'free' use for a pronoun. (Many speak of a deictic use, but that is a bit too specific, as we shall see.)

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[1] What I am calling the 'quantifier' here is the quantified noun phrase 'every boy', not the quantificational determiner 'every'.

What about anaphoric uses? Can they be assimilated to either free uses or bound uses? They obviously have a lot in common with bound uses. First, as we have seen, there are pronouns which tolerate only free uses, and there are pronouns which do not tolerate free uses. The former tolerate neither bound nor anaphoric uses, while the latter tolerate both. This suggests that bound and anaphoric uses fall into the same category. Second, anaphoric and bound uses have this in common, that in both cases the pronoun depends, for its interpretation, upon an antecedent (singular term or quantifier). Free uses, on the other hand, are characterized by the lack of a linguistic antecedent.

Can we go further and provide a unified description of anaphoric and bound uses? Such unification can proceed in two directions, one of which seems to me more promising than the other. We may construe anaphoric uses as a special case of bound use, or bound uses as a special case of anaphoric use. I will refer to the first, less promising strategy as the 'binding strategy', and to the other one as the 'anaphoric strategy'. The anaphoric strategy will be introduced in the next sub-section.

The most straightworward way of implementing the binding strategy proceeds by extending the notion of a quantifier so as to encompass singular terms as well (along the lines of generalized-quantifier theory).[2] On that view the anaphoric reading is the special case of bound use in which the pronoun is bound by a singular term. Alternatively, we may extend to anaphoric pronouns in general the treatment of reflexive pronouns as pronouns bound by an abstraction operator. Just as the sentence 'John loves himself' is analysed by means of a formula such as

λx [x loves x] (John)

we may analyse the anaphoric pronoun 'his' as bound in 'John loves his mother', along the lines of:

λx [x loves x's mother] (John)

Here 'John' may be construed as a genuine singular term, denoting an individual, rather than as a quantifier, denoting a function from properties to truth-values. Still, the pronoun 'his' is bound (by the lambda-operator).

Whichever option we choose, the attempt to reduce anaphoric uses to bound uses faces a fatal objection. Sometimes the singular term from which a pronoun inherits its reference cannot be taken to include the pronoun in its syntactic scope. Thus the pronoun and its antecedent may occur in different sentences, or the antecedent may be

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[2] See e.g. Keenan and Westertahl 1997 on 'Montagovian individuals' as the interpretation of proper nouns, personal pronouns and demonstratives.

too deeply embedded to take scope over the pronoun. Now, whether or not we treat the singular term itself as a quantifier, it must take scope over the pronoun if the latter is to be treated as bound. It follows that the binding strategy fails: not all anaphoric uses can be treated as cases in which the pronoun is bound (Heim and Kratzer 1998: 241-2).

The anaphoric strategy

According to Frege and Russell, a quantificational statement such as 'Something grows' is not on a par with the sort of statement one makes when one uses a singular term. A ground-level statement such as 'John grows' tells us something directly about an object, namely, the object which the singular term stands for (John). A quantified statement such as 'Something grows' is a *higher-level* statement. It tells us that the statement-schema 'x grows' is "sometimes true" (Russell), i.e., that at least one instance of that schema, obtainable by replacing the variable by a singular term referring to an object, is a true ground-level statement. In Frege's terms, just as the ground-level statement 'John grows' is about John, the higher-level statement 'Something grows' is about the property which the ground-level statement ascribes to John: it tells us that that property — the property of growing — is instantiated.

To be sure, it is possible to devise a quantifier which will mimick the singular term 'John'. Let us write it 'John*'. The higher-level statement 'John* grows' tells us that the schema 'x grows' results in a true statement when the variable is replaced by a name for John. While 'John' denotes an individual object, viz. John himself, 'John*' denotes a function from properties or sets of objects to truth-values, namely that function which, for any given set of objects or property, yields truth iff John belongs to that set or possesses that property. Obviously, 'John*' can substitute for 'John' everywhere salva veritate. But the fact that we can use 'John*' to mimick the ground-level name 'John' (and, perhaps, stand for it in our formal reconstruction of natural language) does not suppress the difference between ground-level statements and higher-level statements. It is from the cognitive point of view that that difference matters. We can easily imagine organisms endowed with the ability to make ground-level statements in the absence of any mastery of the higher-level apparatus; but it is not so easy to imagine the opposite situation, because higher-level talk presupposes ground-level talk. If we are to make sense of higher-level statements like 'Every man is F', we must first understand ground-level statements such as 'This man is F'.

Let us apply this idea to the issue at hand. Following Evans (1977), let us assume that, if we are to make sense of higher-level statements like 'Every man loves his mother', we must first understand ground-level statements such as 'John loves his mother'. The former tells us that for every man y, the schema 'x loves his mother', of

which the latter is an instance, results is a true statement if we replace the variable by a name for y. Now, how are we to understand the schema itself? To do so we must fix the interpretation of 'his mother'. If we give the pronoun the free interpretation, the schema will be equivalent to 'x loves z's mother' and the higher-level statement will say that for every man y, 'x loves z's mother' is true if we replace 'x' by a name for y. If we give the pronoun the anaphoric interpretation, the schema will be equivalent to 'x loves x's mother' and the higher-level statement will say that for every man y, 'x loves x's mother' is true if we replace 'x' (on its two occurrences) by a name for y. This reading corresponds to the 'bound' interpretation of the pronoun. In this way we achieve an understanding of bound uses in terms of anaphoric uses, rather than the other way round. Anaphora is seen as a ground-level phenomenon, operative in sentences such as 'John loves his mother'. If, in such a sentence, we abstract the complex predicate '()$_i$ loves his$_i$ mother' and use it to form a higher-level statement by combining it with a quantifier, the anaphoric pronoun is automatically bound by the quantifier in the resulting quantified statement. Bound uses of pronouns turn out to be a reflection, at the higher-level, of the ground-level phenomenon of anaphora (Evans 1977).

Anaphoric uses as free uses

Let us admit that bound uses are best analysed in terms of anaphoric uses (rather than the other way round). To complete the analysis, we must clarify the relation between anaphoric uses and free uses. Here also there are two possible — but, this time, complementary — directions of analysis: we may treat anaphora as a variety of free use, or free uses as varieties of anaphora.

It is natural to consider anaphora as a variety of free use, because we independently need a distinction between various sorts of free use. I said that a free use of a pronoun refers to an object salient in the conversational context. In a first type of case the referent of the pronoun is given and perceptually accessible in the situation of utterance. This type of case is the deictic use: some object is perceptually available to the participants, and the speaker refers to it while, possibly, pointing to it in order to draw the hearer's attention to it. (If the object by itself is sufficiently salient, no pointing is necessary.) In a second type of case, the referent is not given in the situation of utterance and it cannot be pointed to. But it is cognitively accessible because the speech participants 'have it in mind', that is, are thinking about it or about matters with which it is closely associated in their memory or 'mental encyclopedia'.[3]

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[3] Geoff Nunberg gives the following example: we are walking through Versailles, and you say

Gee, he certainly spared no expense.

From such uses to anaphoric uses there is but a short step. If the conversation is about a certain object, the participants have that object in mind — simply because they are talking about it and, perforce, have been thinking about it in virtue of processing a piece of discourse about that object. A person may be cognitively salient because she has been mentioned in the discourse, just as she can be salient because, say, we are driving past the place where she lives. We end up with three basic forms, or sources, of salience: perceptual salience, discursive salience, and associative salience, corresponding to three varieties of free use. Deictic uses exploit perceptual salience; anaphoric uses exploit discursive salience; and uses of the third type (associative uses, as I will call them) exploit associative salience.

The prototype of a free use of a pronoun is generally considered to be the deictic use, where the referent is perceptually salient (see e.g. Clark 1992: 47; Bühler 1934, part II). The other forms of salience are seen as ersatz forms: the object is not really given, but we do 'as if' it was given (and use a demonstrative form) because it is given 'in imagination' or 'in thought'. Free uses that are not deictic are therefore treated as etiolated or secondary deictic uses. But there is another way to look at the relation between the various forms of free use. We may consider the *anaphoric* use as prototypical, because it transparently reveals a central feature of the free use of pronouns.

Free uses as anaphoric uses

The central feature of free uses which makes them all anaphoric in a certain sense is not specific to pronouns: it is a property of singular terms in general. According to Strawson, who initiated this line of research and whose views have been very influential (see e.g. Evans 1982, Heim 1988), the use of a definite singular term presupposes "resources of identifying knowledge antecedently in possession of the audience" (Strawson 1961: 60). As he puts it,

> In any communication situation a hearer (an audience) is antecedently equipped with a certain amount of knowledge, with certain presumptions, with a certain range of possible current perception. There are within the scope of his knowledge or present perception objects which he is able in one way or another to distinguish for himself. (Strawson 1961: 59)

The obvious reference here is Louis XIV, Nunberg says. Even though Louis XIV is not physically present, and cannot be demonstrated, he is "salient in the consciousness of the conversational participants" (Nunberg 1992: 294).

Understanding a singular term consists in linking up that singular term with the relevant stretch of identifying knowledge about a particular object. Following a well-established tradition I call such a stretch of identifying knowledge a 'mental file'. According to Strawson, a use of a singular term invokes a mental file in the mind of the interpreter, and is successful only if the interpreter actually connects the singular term with such a mental file, that is, only if

> the singular term used establishes for the hearer an identity, and the right identity, between the thought of *what-is-being-spoken-of-by-the-speaker* and the thought of some object *already within the reach of the hearer's own knowledge, experience, or perception,* some object, that is, which the hearer could, in one way or another, pick out or identify for himself, from his own resources. (Strawson 1961: 63).

In this framework, the different sources of salience I mentioned above (perceptual, discursive, and associative salience) correspond to different bodies of identifying knowledge exploited by the speaker. Anaphora turns out to be a special case: the case where the resources brought to bear on the interpretation of a referential utterance consist of 'information imparted by earlier sentences in the same conversation'. [4] Yet there is a sense in which that case is prototypical and captures what is common to all cases. In all cases, indeed, *the task of the interpreter is to find a suitable antecedent for the singular term* (a suitable mental file). In anaphoric uses the antecedent is located in the previous discourse, or rather, in the mental representation resulting from the hearer's processing of the previous discourse. But in deictic cases also an antecedent mental file is invoked, corresponding to the hearer's perception of the referent. And the same thing holds for associative uses.

This unification of free uses under the general heading of anaphora is quite apparent in Discourse Representation Theory. Kamp uses Discourse Representation Structures (DRSs) to stand for the mental representations formed in the process of interpreting a discourse, and shows how such representations get incremented as the discourse unfolds (see e.g. Kamp and Reyle 1993). In this theoretical endeavour, anaphoric relations play a crucial role. But the DRSs have been exploited also to represent all the information in the hearer's possession, including perceptual

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[4] "There are...many different types of resource upon which a speaker may draw or rely... He may draw upon what the <hearer> can be presumed to be in a position then and there to see or otherwise perceive for himself. He may rely upon information imparted by earlier sentences in the same conversation. He may rely upon information in the hearer's possession which is not derived from either of these sources." (Strawson 1961: 63)

information, insofar as it is relevant to speech understanding. It is widely assumed that perceptual information can be used to enter a 'discourse referent', just as discourse information can. A deictic use of a pronoun can therefore be considered as anaphoric on such a 'perceptual' discourse referent. In Heim's framework that is explicit — all definite NPs are said to be anaphoric.[5]

The notion of cognitive 'salience' can now be cashed out in terms of the degree of activation, or accessibility, of the antecedent mental file. Among singular terms, some demand that the mental file they connect with be highly accessible. There is a difference, in this regard, between pronouns, demonstrative phrases like 'that man', definite descriptions ('the man'), and proper names. Unstressed pronouns presuppose the highest degree of salience/accessibility. The referents of pronouns, according to Chafe (1974), must be in the hearer's consciousness at the time they are referred to. If the referent is not salient enough (if the relevant file is not currently active) it is preferable to use another type of expression. (See Ariel 2001 for an overview of 'accessibility theory'.)

Deixis and anaphora: perspectives for empirical research

The unification of the various types of free use, including the anaphoric use (in the strict sense), opens up an interesting field of investigation. In particular, it invites a comparative study of the tracking abilities involved in deixis and anaphora.

Insofar as demonstratives secure their reference via perception, we need an account of how perception itself can provide the appropriate grounding for deictic reference. As Austen Clark pointed out, such an account is bound to locate a primitive form of demonstrative reference in sensory processes themselves (Clark 2000). There is, indeed, a growing body of evidence showing that something like demonstrative reference takes place in vision. Pre-conceptual 'object-files' or referential 'indices' are used to track visual objects and gather information concerning them (Treisman and Gelade 1980, Treisman 1988, Pylyshyn 1989, 2000, Leslie et al. 1998). Thus Pylyshyn holds that "we have a mechanism that allows preconceptual tracking of a primitive perceptual individuality"; a mechanism that "is able to individuate and keep track of about five visual objects and does so without using an encoding of any of their visual properties" (Pylyshyn forthcoming).

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[5] This treatment, Kadmon points out, "is quite compatible with deictic uses of definites. Given that on Heim's approach the file is a representation of the common ground (and not merely of information expressed by preceding utterances), the antecedent discourse referent of a given definite NP need not be triggered by linguistic text" (Kadmon 2001: 78).

One obvious question that arises in this area concerns the generality of the indexing mechanism studied by Pylyshyn and others. Is it restricted to vision, or is the same (or the same sort of) indexing system involved also in, say, auditory perception? Pylyshyn himself asks that question, but there is another one, more relevant to our present purposes. Is this mechanism restricted to perception, and to deixis insofar as it is based on perception, or can we go as far as to imagine that a similar indexing system may be at work in discourse processing, enabling us to keep track of about five objects simultaneously at the highest level of accessibility? (Think of what happens when we process a piece of discourse like: 'Yesterday, my brother talked to the policeman about the burglar we saw. *He told him he thought he had escaped, but the policeman would not believe him, arguing that someone was awake, and he would have seen the burglar if he had left*.')

Those issues are worth pursuing empirically, but only if we accept that there is a unified field of investigation involving both deixis and anaphora. Now this age-old assumption has been questioned, and the quest for unification criticized as illusory. According to Gareth Evans (1980), whose argument I will discuss in the second part of this paper, any unified treatment of deictic uses and anaphoric uses is doomed to failure. If anaphoric uses are like deictic uses, that is, if they are free uses, then, he says, the referent of an anaphoric pronoun will be determined on a pragmatic basis, by appealing to considerations pertaining to contextual salience etc. This is indeed what has been claimed by defenders of the 'pragmatic theory' of anaphora, such as Lasnik and Chomsky. Evans argues that any such theory has unacceptable consequences, however.

II. Evans's argument against unification

The structure of Evans's argument

Evans' argument proceeds in two steps. First, he attempts to show that the three uses of pronouns cannot be unified. We are faced with a dilemma, he says. Either we account for the connection between bound uses and anaphoric uses (by appealing to the 'anaphoric strategy'), and that forces us to give up the connection between free uses and anaphoric uses; or we maintain that connection, and we no longer understand that between bound uses and anaphoric uses. The second (and less explicit) step in Evans's argument consists in providing a reason for choosing the first horn of the dilemma. He argues that the connection between bound uses and anaphoric uses is too fundamental to be given up. The same thing cannot be said of the connection between free uses (e.g. deictic uses) and anaphoric uses. Since nothing essential hinges on that connection, it can be dismissed if necessary.

In what follows, I will be concerned only with the first step of Evans's argument. I do not accept the dilemma — I think we *can* unify the three uses of pronouns. More specifically, I reject the idea that, if we account for the connection between anaphoric uses and bound uses, we are no longer in a position to maintain the link between anaphoric and free uses. I will argue that we can preserve that link, appearances notwithstanding.

The dilemma

According to Evans, we must account for the fact that bound uses of pronouns occur in quantified statements (e.g. 'Every man loves his mother') only if anaphoric uses of the same pronouns occur in the same argument-places in the corresponding substitution instances (e.g. 'John loves his mother'). That, he says, can hardly be a coincidence. To account for that fact, we must acknowledge the dependency of bound uses upon anaphoric uses. Evans makes that dependency explicit as follows. To understand 'Every man loves his mother' (on the bound reading of the pronoun), two conditions must be satisfied:

(i)   we must understand substitution instances of the form 'β loves his mother', where 'β' names a man and 'his' is given the *anaphoric* reading;

(ii)   we must understand the quantified statement as saying that such a ground-level statement is true whichever man we take 'β' to refer to.

In other words, we need a general understanding of anaphora in ground-level sentences, and a general understanding of (universal) quantification, but that is all we need. Bound uses of pronouns turn out to be nothing but a higher-level reflection of the ground-level phenomenon of anaphora.

On this analysis, the pronoun does not refer in the quantified statement, since it is bound by the quantifier; but in each substitution instance the pronoun refers: it inherits the reference of its antecedent (that's what makes it anaphoric).[6] Now we can state Evans's objection to the pragmatic theory of anaphora. To treat an anaphoric use as a *free* use is to treat its reference as determined on a pragmatic basis, by appealing to considerations pertaining to contextual salience. This theory, however, cannot apply to the anaphoric pronouns that feature in the substitution instances. *Which* contextual factors could possibly influence the reference of a pronoun in a substitution instance?

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[6] On Evans's approach, in contrast to Geach's, the non-referential character of bound pronouns is compatible with the referential character of the anaphoric pronoun in the corresponding substitution instances. See Evans 1977.

The substitution instances are not real statements: they come into the picture only in the semantic evaluation of the quantified statements, but from a pragmatic standpoint they do not exist: there is, for them, no context of utterance, since they are not uttered. The only context available is the context in which the quantified statement is uttered, but, at that level, no act of reference takes place: reference there is only at the level of substitution instances.

If we want to maintain that anaphoric uses are free uses, Evans concludes, we must give up the analysis of bound uses as involving anaphoric uses at the level of substitution instances; for no 'free' use can be found at that level. If we insist on maintaining the suggested analysis for bound pronouns, then we must give up the view that anaphoric uses are free uses. That's the dilemma. As I pointed out, Evans chooses to give up the connection between anaphoric uses and free uses. He construes anaphoric uses of pronouns (and other expressions) as referential uses characterized by the fact that the reference of the expression is not determined by contextual factors such as salience, but by a *linguistic rule* — the rule of anaphora. That rule applies whenever a singular-term position p_i in a ground-level sentence is 'chained to' another singular-term position p_j elsewhere in the sentence.[7] The rule says that the singular term at p_i refers to whatever the singular term at p_j refers to. In virtue of the rule, an anaphoric pronoun inherits the reference of its antecedent, quite independent from any consideration of salience. Nothing prevents such a rule from applying to anaphoric pronouns in substitution instances.

Higher-level demonstratives

The difficulty which Evans raises for the pragmatic theory of anaphora can be summed up as follows. When I say 'Every man loves his mother' in a context C, there is no salient man *in C* to whom I refer by means of the pronoun. The pronoun 'his', in that bound use, is *not* referential: it is a stand-in for anaphoric pronouns at the level of substitution instances. At the level of substitution instances, the pronoun refers, but the referent which it acquires in a particular substitution instance is not available in the context in which the quantified statement is made. Since that is the only context available, Evans concludes that the reference of the pronoun is not provided by context but via a linguistic rule.

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[7] Evans explicitly considers the possibility that chaining may take place cross-sententially: "It requires only a trivial modification of the grammar to allow the chaining of singular term positions to singular terms which occur in other sentences [even if they are uttered by different people]. No modification of the referential semantics is required at all, once we allow the units processed by our semantic theory to be chunks of dialogue, not just single sentences" (Evans 1977: 102).

To dispose of Evans's argument, my strategy will be to look at a similar example involving a *deictic* use. Deictic uses of pronouns are the most uncontroversial case of free use. If the problematic phenomenon can be reproduced with deictic uses, then it cannot be used to show that anaphoric uses are not free uses. Or so I will argue.

Consider the following example, due to Geoff Nunberg. Gesturing toward John Paul II as he delivers a speech with a Polish accent (shortly after his election), I say (3):

(3)   He is usually an Italian, but this time they thought it wise to elect a Pole.

The pronoun 'he' here is deictic: what I am pointing to in the situation of utterance (viz. the Pope) plays a crucial role in determining the semantic value of the pronoun. Yet the pronoun is not referential: I am not saying that John Paul II is usually an Italian, but, rather, that *the Pope* is usually an Italian. This is equivalent to saying that for most situations of a certain type, the person who is Pope in that situation is an Italian.

Were we to evaluate the first conjunct of (3), we would have to look down to the level of substitution instances and, for every relevant situation, evaluate the statement 'he is an Italian', where 'he' refers to the person filling the role of Pope in that situation. This is formally similar to the case discussed by Evans. If Evans's argument goes through, it should go through in this case as well. With respect to (3), indeed, Evans might say the following. In the context C' in which the quantified statement 'He is usually an Italian' is made, only John-Paul II is given. The Popes of which *being an Italian* can be truly predicated only come into the picture when we consider the situations quantified over by 'usually', that is, they come into the picture and become available for reference only at the level of substitution instances. But those situations of evaluation in which we find referents for the pronoun are not contexts of utterance for either the quantified statement or the substitution instances. The former is uttered in a different situation (the actual situation, in which the Pope is Polish) while the latter are not uttered at all. Hence the reference of the pronoun 'he' in the substitution instances 'he is an Italian' cannot be determined by context: it must be determined by a linguistic rule.

I shall start by criticizing the Evans-inspired argument as applied to the deictic case. This will enable me to expose a flaw in Evans's original argument, and to present an alternative picture of the relations between context, content and reference in the relevant examples.

Rebutting the Evans-inspired argument

As applied to the deictic case, the Evans-inspired argument rests on a confusion. What characterizes deictic uses of pronouns is the fact that the *semantic contribution* (the 'content') of the pronoun on such a use is determined by the speaker's intentions as externalized through his or her pointing gestures (Kaplan 1989b). That contribution typically is an individual to which the pronoun refers, *but it need not be*. What makes the demonstrative pronoun 'he' in (3) nonreferential is precisely the fact that its semantic contribution, though determined by the speaker's pointing gesture, is not an individual but a *role*, namely, the role of Pope which the demonstrated individual happens to instantiate. Exactly the same semantic contribution would be made if we replaced the pronoun by the definite description 'the Pope'; [8] but while the role in question is linguistically encoded by the description 'the Pope', its being contributed by the pronoun in (3) is determined by the speaker's intention as revealed by his pointing gesture. The semantic contribution of the demonstrative pronoun in (3) is therefore as much determined by context as it would be if the pronoun had been used to refer to John Paul II and say something about him (rather than about the role which he instantiates). Hence there is no reason to deny that the use of the pronoun in (3) is a free use — indeed a deictic use.

What about substitution instances? The pronoun in (3) is admittedly nonreferential, but in substitution instances it refers, according to Evans, and its reference cannot be determined by context. Does it not follow that, in substitution instances at least, the pronoun cannot be free, let alone deictic?

Here again, I think there is a confusion. In evaluating the first conjunct of (3), we proceed as follows. We consider all the situations in the relevant domain, and with respect to each of them we evaluate 'he is an Italian', where 'he' contributes the role THE_POPE. To do so we evaluate the role THE_POPE in each situation s and check whether the resulting value is an Italian (in s). If the answer is Yes in most situations, we evaluate the quantified statement as true. Speaking like Evans, we may say that the pronoun acquires a 'reference' (or, better, an extension) at the level of substitution instances. The reference in question is the value of THE_POPE in the situation relevant to the substitution instance at stake. Let us focus on a particular substitution instance, A, and call 'Oscar' the reference of the pronoun in the situation s_1 relevant to A. What

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[8] I assume that a definite description 'the F' contributes a role, which can be formally represented as a partial function from situations to individuals. The value of the role is the object (if any) which possesses the property F in the relevant situation. If, in a given situation, no object, or more than one object, possesses the property, the function is undefined for that situation. When referentially used, descriptions arguably contribute the value of the role (Fauconnier 1985).

determines that Oscar is the reference? Is it a linguistic rule? No. The reference of the pronoun with respect to A is determined by two facts: (i) the fact that the pronoun contributes the role THE_POPE, and (ii) the fact that THE_POPE (s_1) = Oscar. The first fact is determined by context and speaker's intentions, as we have seen. It is determined by the context in which *the quantified statement* is made. (That's the only context available.) The second fact is determined by features of the situation of evaluation.

To sum up, the pronoun in (3) is used deictically, even though its semantic content is general (a role) rather than singular (an individual). It is a free use, because the semantic contribution of the pronoun is determined by contextual factors such as the speaker's intention. Since the statement is quantificational rather than referential, evaluating it requires evaluating substitution instances, and that involves evaluating the role THE_POPE in various situations. If we adopt Evans's way of talking, we may say that the values of the role in the situations in question are what the pronoun 'refers to' in the substitution instances. But then we must acknowledge that the 'reference' of the pronoun in a given substitution instance is determined, quite normally, by the semantic *content* of the pronoun (together with facts about the situation of evaluation), which semantic content itself is determined by the context of the quantified statement. And the fact that the content of the pronoun is determined by context is sufficient to justify classifying the pronoun as 'free', even though the reference of the pronoun is not (directly) determined by context.

The flaw in Evans's argument

To clarify the discussion, let me introduce a handful of notions, borrowed from the theory of direct reference (Kaplan 1989a, Recanati 1993). A (disambiguated) expression is *context-sensitive* or *context-dependent* if and only if its semantic content depends upon, and varies with, contextual factors such as the speaker's intention etc. Indexical expressions and free uses of pronouns are context-sensitive in this sense. The *semantic content* of an expression is that property of it which (i) must be grasped by whoever fully understands the expression, and (ii) determines the expression's extension. It can be represented as a (possibly partial, and possibly constant) function from circumstances of evaluation to extensions. The *extension* of a prima facie singular term (name, pronoun, definite description, etc.) is an individual object — the reference of the term. A prima facie singular term is *directly referential* (or 'referential', for short) iff its content directly fixes its extension (its reference), prior to the encounter with the circumstance of evaluation. Thus we may take the content of a proper name to be the individual it refers to, or at least to determine it directly, in such a way that the reference relation is 'rigid' and independent of the circumstance of evaluation. Among

definite singular terms, some are directly referential in this sense, while others are not. Thus definite descriptions, on certain uses at least, nonrigidly refer to whatever happens to satisfy the condition encoded by the description. The semantic content of the description is a role (a partial function from situations to individuals), but that role does not directly determine the reference of the description: the reference of the description (the value of the function) systematically depends upon the circumstance of evaluation (the argument of the function) and may shift accordingly.

So far, so good. Now I take Evans's argument to go through only if we assume that the expressions at issue (anaphoric pronouns in substitution instances such as 'β loves his mother') are directly referential. Whenever the content of an expression *is* its reference (or fixes it directly), the definition of context-sensitivity I gave above entails that, if the expression is context-sensitive (i.e., if its content is determined by context), then its *reference* is determined by context. It follows that, if the reference of the expression is *not* determined by context, then its content is not determined by context either and the expression cannot count as 'free'. *Evans precisely argues from the fact that the reference of certain anaphoric pronouns is not determined by context to the conclusion that those pronouns cannot be counted as free.* But that transition is truth-preserving only if the expressions at issue are directly referential. If they are not, the conclusion does not follow. Let me illustrate this by considering the case of a definite description.

Take the description 'the US President in 2023'. Let's assume that Woody Allen will be the US President in 2023. Then Woody Allen is the reference of the description. Does the reference of the description, in such a case, depend upon the context of utterance, as the reference of an indexical does? Certainly not. The reference depends upon (i) the content of the description, namely the role US_PRESIDENT_IN_2023, and (ii) the circumstance of evaluation (viz. the US situation in 2023). Now consider a variant of the example: the description 'the next US President'. Here also the reference is fixed by (i) the content of the description and (ii) the circumstance of evaluation. It is not assigned directly in the context of utterance. But in the new variant the context plays a role in determining the *content* of the description (because of the indexical 'next'): depending on when the description is uttered it will contribute different roles, e.g. US_PRESIDENT_IN_2005 or US_PRESIDENT_IN_2023. When the role which is the description's content depends upon the context in this fashion (instead of being encoded in a context-independent manner), the description can be said to be context-sensitive even though the reference of the description is not assigned directly in the context of utterance but is determined by contingent features of the situation of evaluation.

What I have just said is enough to show that Evans's reasoning is faulty. There are cases in which the content of an expression is determined in part by contextual

factors, even though the reference of the expression is determined only by circumstantial factors. Hence it will not do to argue from the fact that the reference is not assigned in context to the conclusion that the expression is not context-sensitive or (in the case of pronouns) that it is not 'free': that piece of reasoning is acceptable only if we assume that the expression at issue (the pronoun) is directly referential, in such a way that its content can't be fixed by context without its reference also being fixed by context. In other words, *Evans's argument goes through only if we rule out a descriptive analysis of the pronoun's content*.

Such a descriptive analysis is precisely what I have provided in the deictic case. In (3), I claimed, the pronoun contributes a role, and its content is the same as that of the description 'the Pope'. If that's right, and if the same thing holds when we move to the level of substitution instances, then *the fact that the reference of the pronoun in substitution instances is not determined by context in no way shows that the pronoun itself is not free*. Similarly, I think we should not rule out the following option: perhaps the pronoun 'his' in examples like 'Every man loves his mother' contributes a role, and perhaps the situation is not fundamentally different when, in the course of evaluating the statement, we move to the level of substitution instances. Let's assume that is the case. Then from the fact that the reference of the pronoun in substitution instances is not determined by context, it does not follow that the pronoun is not free. Evans's argument simply begs the question by assuming a referential analysis of anaphoric pronouns — an analysis which is not forced upon us simply in virtue of the fact that we want to analyse bound uses in terms of anaphoric uses.

III. Outline of a unified theory

Index vs. content: (1) deixis

If what I have said is correct, there can be deixis without reference. In (3) the pronoun is admittedly not referential: it does not refer to an individual person like John Paul II or anyone else. John Paul II is demonstrated, but he is not referred to. (If he were, the statement would say that John Paul II is usually an Italian.) Still, the pronoun is used deictically. What is distinctive of deixis is not the fact that the semantic contribution of the pronoun (its content) is an individual singled out in the situation of utterance, but rather the fact that its semantic contribution is determined via its relation to something which is singled out in the context of utterance (Nunberg 1993).

Following Nunberg, let us distinguish two steps in the interpretation of an indexical expression. The first step is the identification of the *index*, i.e. an aspect of the situation of utterance to which the expression draws the hearer's attention and in terms

of which he or she can identify the expression's content. In the case of the first-person pronouns 'I' and 'we' the index is *the speaker* — the person making the utterance. In the case of indexicals like 'now', 'today', 'tomorrow' etc. the index is the *time of utterance*. In the case of demonstratives the index may be taken to be *a place indicated by the speaker* using his pointing finger, the direction of his gaze or any other means. (Here I depart from Nunberg, who thinks the index of a demonstrative is the demonstrated object.)

The second step in the interpretation is the identification of the expression's content (its reference, in standard cases) in terms of the index. In the case of 'I' the reference happens to be identical to the index, but that is a special case. The reference of 'we' is *a group containing* the index, the semantic value of 'today', similarly, is a day including the index, etc.

What about demonstratives? I said that a demonstrative indexes a position in physical space — the position indicated by the pointing gesture. In some cases that position can be the semantic content of the demonstrative expression ('look *there'*), but in most cases the reference or semantic content will be something other than the position — for example, an object found at that position ('look at *that'*).[9] Even in such cases the position is primary, for the reference is identified in relation to it. Given this primacy of places in demonstrative reference, 'that man' can be analysed as something like *the man who is there*, where 'there' indexes a place, and the whole phrase refers to the man at that place (Lyons 1975: 68).

A deictic pronoun can also contribute a property or a role, rather than an individual. Example (3) is a case in point. The pronoun remains deictic because it indexes a place in the situation of utterance and contributes something which bears a certain relation to that place (namely the role of Pope, which is instantiated at that very place by John Paul II).

I suggest that we apply the same sort of analysis to anaphoric and bound uses of pronouns. Anaphoric pronouns, I will argue, have an essential feature in common with deictic pronouns: In both cases, the pronoun indexes something, and its semantic contribution is determined in relation to the index.

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[9] According to Nunberg, deictic expressions such as 'here' and 'there', 'this' and 'that' lexically encode two sorts of information: deictic information pertaining to the index and classificatory information pertaining to the reference. The former is conveyed via features like *proximal* and *distal* in terms of which 'here' contrasts with 'there', 'this' with 'that' and 'these' with 'those'. The latter information is conveyed via features like gender, number and animacy and also by explicit or implicit sortals. As to the relation between index and reference, it is contextually determined (rather than lexically encoded, as in the case of pure indexicals like 'tomorrow').

Index vs. content: (2) anaphora

What anaphoric pronouns index is not a position in physical space (like demonstratives) but a position in linguistic space, namely an *argument position*.

An argument position is a position in the grammatical structure of a sentence where an argument role is articulated. For example, in the sentence

(4)   Bill gave the book to Mary

there are three argument positions:

$()_i$ gave $()_j$ to $()_k$

They articulate three roles constitutive of the action (or event) of giving: the role of giver, the role of gift, and the role of recipient. These thematic roles can be construed as relations between the action described by the sentence and the entities which participate in the action. Following Davidson, Parsons, Higginbotham, and others, we may construe (4) as positing the existence of a giving event e to which Bill, the book, and Mary respectively stand in the relations corresponding to the three roles.

A number of problems arise in the theory of thematic roles. For example, it's still an open question whether thematic roles are universal across types of action, or specific to them. Do we need a specific role of 'giver', or can we manage with the general role of 'agent', as applied to various types of action (givings, walkings, etc.)? I cannot even begin to address such issues here. On the other hand there are two guiding principles of the theory that I would like to mention, as they are directly relevant to the points I want to make:

Principle 1: In conjunction with the lexical semantics of the verb, the grammatical positions occupied by noun phrases uniquely determine the thematic roles associated with those noun phrases.

Principle 2: A given thematic role can be articulated only once in a simple sentence (Fillmore 1968: 21).

In virtue of Principle 1 (to be qualified later) the argument position which an anaphoric pronoun indexes uniquely determines a thematic role. The role may therefore be considered as part of what is indexed. Going further, we may be tempted to say that what an anaphoric pronoun indexes is less the position than *the thematic role*

articulated at that position. But nothing much hinges on the precise choice of index (argument position or thematic role), insofar as the position uniquely determines the thematic role. Hence, for the time being at least, we can indifferently talk of the position or the role as being indexed.

In virtue of Principle 2, there can be at most one entity filling a given thematic role in the (minimal) event described by a simple ground-level sentence.[10] The entity in question may be plural: it may be, for example, a group of people. But whichever entity it is, that entity is the only filler of the role. The reason for that is the following. An entity x fills a given role r in the minimal event e described by a ground-level sentence S only if S ascribes x to r as its value. Now S ascribes x to r as its value only if x is referred to by some expression occupying a position articulating r in S. By principle 2, at most one position can articulate r in S. It follows that there can be at most one entity filling role r in e, namely the reference of the term occurring at the unique position articulating r in S. Thematic roles can therefore be represented not merely as relations between the actions (events, situations) described by the simple ground-level sentences and the entities which participate in them, but as *functions* taking those actions as arguments and those entities as values.[11]

Armed with those principles, let us consider the issue of semantic content. What is the semantic content of an anaphoric pronoun? Typically it will be the *value* of the indexed role, when that role is fed as argument the action described by the antecedent sentence.[12] The value in question is the referent of the term occupying the indexed position. Thus imagine that (4) is followed by an utterance of

(5) He hopes she will appreciate it.

The three pronouns may be interpreted as indexing the three argument positions distinguished earlier in sentence (4), as follows:

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[10] The minimal event described by a ground-level sentence is an event type fitting the description provided by the sentence, such that no proper part of that event itself fits that description. See Heim 1990: 146. By 'the event (situation, etc.) described by a ground-level sentence', I will always mean the minimal event (situation, etc.) described by that sentence.

[11] Notationally, I will distinguish between the two construals by using small letters for roles-as-relations and capital letters for roles-as-functions. Thus EXPERIENCER $(e) = \iota x\!: Experiencer(x, e)$.

[12] By 'antecedent sentence', I mean the sentence in which the indexed position is found. (This may be the same sentence as that in which the anaphoric pronoun occurs.) For the time being I assume that the antecedent sentence is a ground-level sentence. Cases in which the indexed position is occupied by a quantifier rather than by a referential expression will be dealt with in the next section.

he$_i$ hopes she$_k$ will appreciate it$_j$

Those positions uniquely determine three thematic roles in the action e_1 described by (4), namely that of giver, that of recipient, and that of gift. The semantic value of 'he' in (5) will therefore be GIVER (e_1) = Bill, that of 'she' will be RECIPIENT (e_1) = Mary, and that of 'it' will be GIFT (e_1) = the book.[13]

In this way anaphoric pronouns inherit the reference of their antecedents, yet they do not do so in virtue of a brute 'rule of anaphora', but in virtue of being a variety of indexical expressions which (i) index an argument position and (ii) contribute the value of the thematic role articulated at that position.[14]

Index vs. content: (3) Bound pronouns

When the indexed position is occupied by a quantifier rather than a referential expression, the semantic content of the pronoun cannot be the value of the role articulated at the indexed position, since the antecedent sentence does not ascribe a particular value to that role (but only a course of values). I assume that, in such a case, the semantic content of the pronoun is the role itself. The pronoun is therefore equivalent to a definite description, as in Evans's theory of E-type anaphora. Thus I distinguish two varieties of anaphora : *referential anaphora*, where the semantic content of the anaphoric pronoun is the value of the indexed role (i.e., where the pronoun inherits the reference of its antecedent); and *descriptive anaphora*, where the content of the anaphoric pronoun is the role itself. E-type anaphora is a special case of descriptive anaphora (see next section).

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[13] The event variable 'e_1' is free here, in contrast to the event variable 'e' that is bound by an existential event quantifier in the logical form of both sentence (4) and sentence (5). Sentence (5) says that there is an eventuality e, such that e is a state of hope, and the experiencer of e is the value of the role GIVER in event e_1 (where e_1 is the minimal event described by (4)), and so on and so forth.

[14] An anonymous reader had trouble with « the suggestion that identification of the thematic role is instrumental in a crucial way in the identification of the reference ». « Surely », he or she says, « it is the classification information (as defined in note 7) together with general knowledge about presents being the kind of things that are appreciated 'in virtue of which' we are able to give the pronouns in (5) an antecedent or reference, downstream in the discourse to (4). » I agree, but this is consistent with what I say. I claim that, to understand an anaphoric expression, one has to identify its index (the relevant argument position/role). This is consistent with the fact that, to identify the relevant index, one often relies on the sort of information the reader mentions. (Similar considerations apply to demonstratives.)

Bound uses of pronouns are another special case of descriptive anaphora, characterized by the fact that the pronoun is in the scope of the quantifier that occupies the indexed position. Consider, for example, sentence (6) :

(6)   Every man$_i$ loves his$_i$ mother.

The pronoun 'his' is not referential here: it does not inherit the reference of its antecedent, since its antecedent is not referential. Still it is anaphoric. What makes the pronoun anaphoric is the fact that *it indexes an argument-position in the sentence,* namely, the position occupied by 'every man' in surface structure. In a ground-level statement such as 'John loves his mother' the pronoun does the same thing: it indexes the argument-position occupied by the subject of the verb. The difference is that in the ground-level statement the argument-position is filled by a referential term, in such a way that the anaphoric pronoun can inherit its reference. In the higher-level statement the argument-position is occupied by a quantifier, so that the semantic content of the anaphoric pronoun can only be the role articulated at the indexed position. This is an instance of descriptive anaphora.

The role which is the content of the anaphoric pronoun in (6) is the role articulated at the indexed position. Since the indexed position corresponds to the subject of the verb 'love', the articulated role is that of LOVER, i.e. the experiencer in the LOVE-relation. Sentence (6) says that for every man x, there is a state of love of which x is the experiencer (the LOVER) and the theme of which (the LOVEE) is the mother of the experiencer, i.e. the mother of x. Using definite descriptions and a standard event semantics, we can represent the logical form of (6) as follows:

(6/D)   [Every x: man x] [$\exists e$]
          (State_of_love (e) & Experiencer (x, e)
          & Theme (ιz: Mother of (z, ιy: Experiencer(y, e)), e))

In evaluating (6), we have to look down to substitution instances of the form 'β loves his mother', where 'β' names a man. What is the content of the pronoun in such a substitution instance? There are two possible options here. What has been said about ordinary instances of anaphora such as 'John loves his mother' suggests that, with respect to a situation in which a particular man β fills the role of lover, the anaphoric pronoun refers to that very man. If that is so, then the semantic content of the pronoun in substitution instances is the value of the role, even though the semantic content of the pronoun in the quantified statement is the role. To justify this shift in semantic content from the quantified statement to its substitution instances we might say that the

semantic content of an anaphoric pronoun is *always* the value of the role it indexes, *unless* no such value is available. In quantified statements evaluation of the role is not directly possible and has to wait until substitution instances are brought into the picture. But in the substitution instances, as in ordinary anaphoric utterances, evaluation of the role is possible.

But why should we accept the invoked principle, to the effect that the content of an anaphoric pronoun *must* be the value of the indexed role, whenever such a value is accessible? Is this not too rigid? Whoever is impressed by the analogy between anaphoric uses and free uses will be prepared to acknowledge the fact that the semantic content of an anaphoric pronoun, like that of a deictic pronoun, is very much up to the speaker. Thus I take it that, when the indexed position is occupied by a referential expression, *the semantic content of an anaphoric pronoun may be either the value of the indexed role, or the role itself.* This is hidden by the fact that the two readings of 'John loves his mother' — the reading in which the content of the anaphoric pronoun is the role of LOVER, and the reading in which the content of the pronoun is the value of that role — are truth-conditionally indistinguishable in simple sentences. But we can reveal the ambiguity by using VP ellipsis:

(7)   John$_i$ loves his$_i$ mother, and Paul does too.

On the role reading, that means that Paul too loves his (own) mother. On the value reading, that means that Paul too loves John's mother.

When the anaphoric pronoun indexes a position occupied by a quantifier, as in (6), there is no choice: the value reading is ruled out, as the role cannot be directly evaluated (since the antecedent sentence does not ascribe a specific value to the role). Note that the same thing seems to happen in syntactic contexts in which the reflexive would be used: 'John loves himself' can only take the role reading, it seems, for 'John loves himself, and so does Paul' does not seem to be ambiguous. It cannot mean '... and Paul too loves John'. (I will not attempt to account for that fact, nor, more generally, for the behaviour of reflexives.)

In the framework I am sketching, the anaphoric pronoun contributes a role when the role it indexes is not ascribed a particular value in the antecedent sentence, but in the other cases it may contribute either the role or the value of the role. What about substitution instances? Shall we say, with Evans, that the anaphoric pronoun is referential in substitution instances and contributes the value of the role, i.e. the entity which the referential antecedent refers to? We might, but I see no reason to do so. In evaluating a statement like (6), we look down to substitution instances in which a referring expression substitutes for the quantified phrase, but *everything else remains*

the same. In particular, the pronoun which we find in a given substitution instance is the same pronoun we find in the quantified statement, and there is no reason why it should not carry the same semantic content. Since, in the quantified statement, that content is a role, I will assume that it is a role also in the substitution instances. This creates no difficulty whatsoever. In evaluating (6), we look for substitution instances of the form 'β loves his mother', where 'β' names a man and the pronoun contributes the role of LOVER. To evaluate that instance we check whether the value of the role in the situation which the substitution instance describes, i.e. the man β who fills the role of LOVER, has the relevant property, i.e. is an x such that x loves the mother of x. This is very straightforward. On this analysis the logical form of an arbitrary substitution instance (6*) is (6*/D), while for Evans it is (6*/R) :

(6*) $β_i$ loves his_i mother

(6*/D) [∃e] (State_of_love (e) & Experiencer (β, e)

            & Theme (ι$z:$ Mother of (z, ι$y:$ Experiencer(y, e)), e))

(6*/R) [∃e] (State_of_love (e) & Experiencer (β, e)

            & Theme (ι$z:$ Mother of (z, β), e))

For Evans, the content of the pronoun in substitution instances is referential. In my analysis that content is descriptive.

In section 2 I claimed that Evans's argument goes through only if we opt for the referential analysis : if we choose the descriptive analysis, we may escape Evans's conclusion by arguing that the *content* of the pronoun is determined by context even though its *reference* (its extension) is not. But the framework set up in section 3 enables us to escape Evans's conclusion *even if we opt for the referential analysis*. In that framework, we draw a distinction not only between content and reference/extension, but also between content and index. It follows that, even if we equate the content of a pronoun to its reference, we can resist Evans's conclusion that anaphoric uses are not free uses. Let us assume that the pronoun in substitution instances is referential, in accordance with (6*/R). What determines the reference of the pronoun, on this view, is not the context but the rule that the pronoun refers to the value of the indexed role. This is a new version of the 'rule of anaphora'. Even if the reference of the pronoun is determined by this rule, however, we can maintain that the indexed role itself is determined by context. *The context of the quantified statement determines the role that is indexed in the quantified statement and in each of its substitution instances*. The fact that the reference of the pronoun depends upon a contextually determined index in this way is arguably sufficient to justify treating the pronoun as free.

The context-sensitivity of anaphora

In the theory I have sketched anaphoric pronouns are like demonstratives and other indexicals. Interpreting such an expression in context is a two-step procedure which requires, first, identifying the index, then identifying the content in terms of the index.

Some indexicals have their index and their content determined in a rule-governed manner. Thus 'tomorrow' systematically indexes the day of utterance and refers to the following day. In other cases (e.g. demonstratives) the index and/or the content heavily depend upon the intentions of the speaker. Anaphoric pronouns belong to this last category. Within certain constraints of accessibility, the indexed argument position is up to the speaker. That much is obvious. What is less obvious is that the content of the pronoun also depends upon the speaker's intentions, even after the index has been fixed.

As we have seen, the content of a pronoun anaphoric on a referential expression can be either the role articulated at the indexed position, or the value of the role. But that is not the only dimension of contextual variation for the content of anaphoric pronouns. I said that the indexed position uniquely determines a role in the situation described by the antecedent sentence. This should be qualified; for, in certain cases at least, more than one role can be associated with a given position. This generates a second dimension of variation for the content of an anaphoric pronoun.

Consider sentence (4) again:

(4)   Bill gave the book to Mary.

I said that there are three argument positions here:

$()_i$ gave $()_j$ to $()_k$

That is true if we disregard the noun-phrases which occupy the argument slots and which come to be associated with the thematic roles articulated at those positions. However, if we take the noun-phrases themselves into account, we see that there is at least one additional argument position, namely that which corresponds to the predicate 'book' in the noun-phrase 'the book'. Each predicate, whether verbal or nominal, comes with one or several argument positions. What makes the argument position corresponding to the noun 'book' hardly noticeable in (4) is the fact that the noun-phrase 'the book' itself occupies the second argument position of the verb, in such a way that the role articulated at that position (the role of GIFT) and the role corresponding to the noun 'book' (the role of BOOK) are co-instantiated in the event described by (4). It is as

if a single, complex role was articulated at the relevant position: the role of a book that is given. This superimposition of roles at a single position in (4) I represent as follows:

$()_i$ gave $()_j^{\text{book}}$ to $()_k$

The complex role BOOK_&_GIFT articulated at position j in this example I call the 'S-role', because it results from the joint contributions of the verb and the noun-phrase as they combine in the complete sentence. This is distinct both from the 'V-role' — the role of GIFT — which the verb itself articulates at the relevant position, and from the 'N-role' — the role of BOOK — corresponding to the noun.

The coexistence of the three types of role generates a second dimension of contextual variation for the content of an anaphoric pronoun. In a two-sentence discourse like 'Three students came. They...', where the pronoun 'they' in the second sentence is understood as anaphoric, the pronoun can pick up either the S-role, or the V-role, or the N-role, thus giving rise to three distinct interpretations. On the S-role interpretation, 'they' means something like *the students who came*. On the N-role interpretation, it means *the students*. On the V-role interpretation, it means *the persons who came*.

At this point obvious objections and counterexamples spring to mind. First, it may be objected that the three readings I have just mentioned are simply not available. Sentence (8) seems to have only one anaphoric reading, and it is the E-type reading, corresponding to what I have called the S-role interpretation:

(8)   Three students came. They were accompanied by their girlfriends.

The second sentence of (8) says that *the students who came* were accompanied by their girlfriends. If the V-role interpretation was available, (8) would entail that no one came unaccompanied (since the second sentence, on that interpretation, would say that *the comers* were accompanied by their girlfriends). But the truth of (8) is clearly compatible with a situation in which many people came by themselves, unaccompanied.

Second objection: which interpretation is available is not a pragmatic matter (as I have suggested) but, to a large extent, a syntactic matter. Thus if we change the syntax of the example we make the V-role interpretation possible:

(9)   Three students came with their girlfriends.

Like the pronoun 'they' in (8), the pronoun 'their' in (9) indexes the argument position occupied by 'three students'. But in (9) the anaphoric pronoun picks up the V-role (the

role of agent of the action of coming, or COMER) rather than the S-role. The sentence says that '*x* came with *x*'s girlfriend' is true of three students. The property it ascribes to the three students is the property of being a comer accompanied by *the comer's girlfriend*.

I grant the second point: the syntax obviously affects the possibilities of interpretation for the anaphoric pronoun. In (9) the quantified noun-phrase 'three students' binds the pronoun, in such a way that the anaphoric relation between the pronoun and its antecedent is confined to the formula on which the quantifier 'three students' operates (a formula which does *not* contain the noun 'student'). The N-role interpretation and the S-role interpretation are therefore ruled out. But in (8) the anaphoric pronoun 'they' is not in the scope of the quantifier 'three students', hence there is no such restriction: the anaphoric pronoun can point, from outside, to the S-role jointly contributed by the verb and the noun-phrase. This is the standard E-type reading: the pronoun 'they' contributes the S-role STUDENT_&_ COMER rather than merely the V-role of COMER.

This leaves us with the first objection. Can the pronoun 'they' in (8) really contribute the N-role or the V-role, as I have claimed, or can it only contribute the S-role, as theorists of E-type anaphora claim? Can the second sentence of (8) mean that *the persons who came* (whether or not they were students) were accompanied by their girlfriends, or that *the students* (whether or not they came) were accompanied? I tend to think that both interpretations are indeed available, even though I agree that they are not very salient. To make them visible, let me change the example while retaining its overall structure:

(10)   Three students came. Actually they were not students, but schoolchildren.

(11)   (Only/at most) three students came. They were too scared.

I claim that in (10) the anaphoric pronoun 'they' contributes the role of COMER: the second sentence of (10) says that *the persons who came* were not students but schoolchildren. This is the V-role interpretation.[15] I also claim that, in one possible interpretation for (11), the anaphoric pronoun 'they' picks out the role of STUDENT

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[15] As one reader pointed out, the second sentence could equally have continued (without sounding unacceptable) 'and they never came, they just pretended to come'. This creates an obvious difficulty for my account.

carried by the noun in the antecedent sentence: the second sentence says that *the students* were too scared to come.[16] This is the N-role interpretation.

I have to admit that these examples are not fully convincing — more detailed investigations are obviously required. Yet I wish to maintain, tentatively, the general conclusion : even after a given argument position has been pragmatically selected as index in interpreting an anaphoric pronoun, the content of the pronoun can still vary according to the intentions of the speaker. The pronoun may contribute a role or the value of the role, and the role itself may vary to some extent.[17] Sentences with anaphoric pronouns therefore display a high degree of context-sensitivity, similar to that displayed by sentences with demonstrative pronouns.

Conclusion

According to the pragmatic theory of anaphora, anaphoric uses of pronouns are free uses, like deictic uses and associative uses. Evans's argument against the pragmatic theory has been shown to rest on unargued assumptions. In the version of the pragmatic theory I have outlined, anaphoric uses of pronouns turn out to be very similar to deictic uses. Like deictic uses, anaphoric uses are 'indexical' in the rather strict sense discussed by Nunberg: their content is contextually determined in terms of some feature of the situation of utterance (the index). For demonstratives the index is a position in space ; for anaphoric pronouns, it is a position in 'discourse space', i.e. an argument position articulated in the surrounding discourse. (Not all free uses of pronouns possess that property of indexicality. In associative uses a content is contextually assigned to the pronoun directly, rather than via a two-step procedure involving an index. See Nunberg 1993: 36-38.)

Besides indexicality, another thing that is arguably common to deixis and anaphora is what I call *the context-dependence of character*. The character of 'pure indexicals' such as 'I' or 'tomorrow' is fixed by the linguistic meaning of the expression

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[16] On another possible interpretation for (11), the pronoun 'they' belongs to the associative type and refers to the students who did not come. But I take it that there is also an interpretation in which 'they' means *the students* (rather than *the other students*).

[17] There is a third dimension of contextual variation : the situation used in evaluating a role is not always the situation described by the antecedent sentence. In (10), for example, the situation used in evaluating the role is not the situation described by the antecedent sentence but a distinct situation, namely the 'historic' situation referred to by the speaker. (On the distinction between the situation described by a sentence and the 'historic' situation referred to by the speaker, see Austin 1950, Barwise and Etchemendy 1987, and Recanati 2000.) If the situation of evaluation was the situation described by the antecedent sentence, the statement made by the second sentence would be self-contradictory.

type. Thus the character of 'tomorrow' is the rule that a token of that expression (directly) refers to the day following the day of utterance. According to Kaplan, a demonstrative *qua* expression type does not possess a character. It is semantically incomplete and acquires a full-fledged character only when it is indexed to a contextual demonstration or, more simply, to a 'directing intention' which may or may not be externalized. On my view, the same thing holds for anaphoric pronouns. An anaphoric pronoun acquires a character only when its index, and possibly (some of) the additional parameters necessary to determine its content, have been contextually fixed.[18] This point, which I can only mention in passing, is of some significance given its potential consequences for the structure of the theory of meaning, and especially for the division of labour between semantics and pragmatics.

A third important feature of the theory outlined in this paper is the subdivision of anaphoric uses into two sub-categories : referential anaphora and descriptive anaphora, with bound uses turning out to be nothing but a special case of descriptive anaphora. We wind up with the following classification, which summarizes the paper :

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                            Free uses
                          /          \
                    indexical        associative
                   /        \
              deictic      anaphoric
                          /         \
              referential anaphora   descriptive
                                      anaphora
                                     /        \
                                 unbound      bound
```
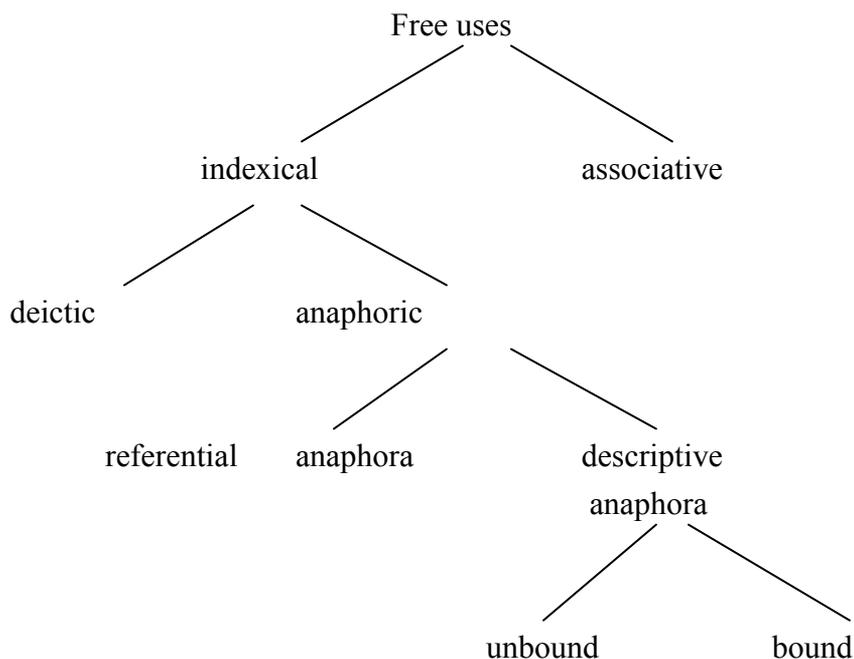
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[18] Again, I leave reflexives and their cognates aside in this discussion.

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