

Representing and Accessing Focussed Referents*

Peter Bosch
IBM Germany, Science and Technology – LILOG,
Stuttgart, Germany

This paper considers linguistic evidence concerning the form of focussed representations of discourse referents and the linguistic means used to access such representations. It is argued that two forms of representation can be distinguished, one of which, explicit focus, is accessed via linguistic representations of discourse referents, whereas the other, implicit focus, cannot be accessed via linguistic properties but only via object properties of the discourse referents themselves. Explicit focus is typically, though not exclusively, accessed by means of unmarked referential expressions (typically de-accented anaphoric pronouns), while implicit focus is accessed only by marked devices, including accented pronouns.

0. Introduction

Linguists and philosophers long looked upon definite reference as if it were entirely a matter of the descriptive content of referential expressions. In ordinary discourse, however, such information is usually insufficient to bring about unambiguous reference, certainly for pronouns with their extremely attenuate semantic content, but also for full NPs.

The successful recovery of intended referents via the descriptive content of referential expressions would generally require the limitation of search processes to a fairly small discourse-relative search space: a “universe of discourse”, “discourse representation”, or “discourse domain”, which contains all and only the referents relevant in the current discourse. In one form or the other, some such assumption has become commonly accepted.

Although a limitation of the search to discourse domains is certainly a step in the right direction, and although the assumption of discourse domains seems useful also for a number of other purposes, they are still too large to serve as search spaces for reference resolution. It is highly implausible, for instance, that a personal pronoun like *she* should be interpretable unambiguously only in a discourse where precisely one woman has occurred.

A more promising alternative is the notion of temporary salience of particular discourse referents and a corresponding dynamic salience structure or *focus structure*, which may or may not be superimposed on discourse domains.

The focus structure of a discourse is largely determined by the cognitive structure a mental model would impose on particular discourse tasks and subject matters. This has been shown for a variety of tasks such as descriptions of apartments, mechanical assembly tasks, and

* I am grateful to the following colleagues for comments and criticism on earlier versions of this paper and for discussions pertaining to its subject matter: Gill Brown, Francis Cornish, Alan Garnham, Simon Garrod, Joep Jaspers, Georges Kleiber, Jane Oakhill, Gisela Redeker, Claus Rollinger, Wilbert Spooren, Liliane Tasmowski, and an anonymous referee of this journal.

narratives (cf. for instance Linde 1979; Grosz 1981; Marslen-Wilson, Levy, and Tyler 1981, Redeker 1986). Additionally, there would also seem to be more general and domain-independent cognitive principles that govern the focus structure of discourse, in particular principles concerning relations of discourse coherence (Hobbs 1979, Mann and Thompson 1986) and topic-comment sequences (Givón (ed.) 1983, Bosch 1983:203ff).

Not every discourse referent, in the usual understanding of this notion, can be in focus. Only a small part of a discourse representation is focussed at any particular moment. But when does a referential expression access the focus representation and when does it fall back on the wider discourse representation? This is the main question to which this paper is addressed. In particular, I shall consider differences in the form of representation and in the form of referential expressions that access these representations.

As a framework for the questions I want to discuss I shall adopt a proposal for a division in short-term working memory which was put forward by Sanford and Garrod (1981) (Section 1.1). Subsequently I shall amend this proposal so as to account for the role of the descriptive content of referential expressions in accessing the different memory registers. The remainder of Section 1 provides linguistic evidence for this amended model. Section 2 discusses some problems which this model faces with regard to antecedentless pronouns (2.1) and marked referential devices (2.2). Section 2.3 summarizes the proposal.

1. Explicit and implicit focus

1.1 Sanford and Garrod's focus distinction

Sanford and Garrod (1981) and Garrod and Sanford (1982) have put forward the idea that anaphoric pronouns and NPs are each interpreted with respect to different mental representations. They propose a division of short-term working memory or, as they say, focussed memory, into two registers: *explicit focus* and *implicit focus*.

Focussed memory is seen as a dynamic form of discourse representation which is built up and changes in the course of processing successive utterances. The contents of focussed memory is roughly equivalent to a set of discourse referents in the sense of Karttunen's pioneering paper (1976, first circulated in 1969)¹. However, as Garrod and Sanford observe, some of these discourse referents may, at a particular point in discourse, be more readily accessible than others. Some discourse referents are sufficiently prominent so that even a highly ambiguous referential device, such as an anaphoric personal pronoun, is sufficient to identify them, while others can be accessed only by more elaborate devices, such as full definite noun-phrases.

The following cases exemplify the intended difference:

- (1) a. Fred came home late. He was tired.
- b. Fred was driving to London. The car kept breaking down.

When the first sentence of the (a)-sequence has been processed the explicit focus would contain a representation of Fred, and the pronoun in the second sentence can link up to this representation. Similarly the interpretation of the first sentence in the (b)-sequence would, via the interpretation of the verb *drive*, invoke the representation of a car. This representation would however not be resident in explicit but in implicit focus. The crucial difference is that

¹ "Let us say that the appearance of an indefinite noun phrase establishes a 'discourse referent' just in case it justifies the occurrence of a coreferential pronoun or a definite noun phrase later in the text" (Karttunen 1976:366).

Table 1 Sanford and Garrod's Focus Division

<i>Short-term working memory ("focussed memory")</i>	
<i>Explicit focus</i>	<i>Implicit focus</i>
1. Representation of entities mentioned in the preceding discourse	1. Representation of entities from a scenario that is invoked by preceding discourse
2. Access by means of pronouns	2. Access by means of definite full NPs

Fred is explicitly referred to in the preceding discourse and the car is not: explicit focus comprises "representations based on entities mentioned in the text", and implicit focus comprises "scenario based entities". In the case at hand, the relevant "driving"-scenario would be the basis for the representation of a car (Sanford and Garrod 1981:158). Table 1 summarises this proposal.

The distinction is supported by the observation that, in (2) below, and in many similar cases, objects that have not explicitly been referred to cannot be accessed by anaphoric personal pronouns (Sanford and Garrod 1981:161). Cf.

- (2) a. Fred was driving to London. {The car / [?]It} kept breaking down.
 b. Mary was dressing the baby. {The clothes / [?]They} were made of pink wool.

It is not clear however in Garrod and Sanford's proposal where exactly the empirical claim lies. On the one hand, it may seem that both accessibility by means of anaphoric personal pronouns and origin in explicit mention form part of the *definition* of the notion of explicit focus and distinguish it conceptually from implicit focus. On the other hand, it seems occasionally that either one or both of these two points are viewed as *empirical claims*.

In principle there would be nothing wrong with interpreting the entire proposal Sanford and Garrod made as a model of focussed memory that must be empirically confirmed as a whole, if origin in explicit mention and accessibility by means of pronouns did not lead to different predictions. Unfortunately however, there are occurrences of personal pronouns that are naturally and unambiguously interpretable although they have no explicit antecedent. And here the Sanford and Garrod story gets stuck: should we say, in view of such cases, that there are also other ways of entering representations into explicit focus than explicit mention in discourse? Or should we say that pronouns may also access implicit focus? And then: would such an amendment be an amendment of the definitions of explicit and implicit focus or would it be a change in an empirical hypothesis?

The notion that only those entities can subsequently be referred to by personal pronouns that have been explicitly referred to in preceding discourse² is certainly incorrect. There are a variety of mechanisms that can implicitly (i.e. without explicit preceding reference) introduce referents which are subsequently accessible for reference by means of anaphoric pronouns. Cf. the following cases.

² This notion is quite common at least in the psychological literature on pronouns (cf. Carpenter and Just 1977, Clark and Clark 1977) and is also assumed in Sanford and Garrod (1981:158) and Garrod and Sanford (1982). It is no longer supported however in Sanford e.a. (1983:314).

- (3)
- a. John wants to catch a fish and eat *it* for supper. (Partee 1970)
 - b. No-one will be admitted to the exam unless *he* has registered four weeks in advance.
 - c. Either no letter was sent, or *it* got lost.
 - d. Shakespearean imitators usually fail to capture *his* style. (Postal 1969)
 - e. When Jane drinks, she usually gets sick and poor Fred has to clean *it* up.
 - f. Watch out for that snake. *They* are poisonous. (Tasmowski and Verluyten 1982)
 - g. Johnson spends his money on big cars, and Williams spends *it* on expensive holidays.
 - h. Few MPs attended the meeting. *They* had better things to do. (Moxey and Sanford 1987)
 - i. In Edinburgh *they* work pretty hard. (Yule 1981)
 - j. Mark just got married. *She's* in the office next door. (anonymous referee on this journal)

In all these cases, which need not be discussed here in detail (but cf. Bosch 1983 Ch.5), the italicized pronoun picks up an entity that has not explicitly been referred to before. Such cases are found even more frequently in spoken discourse directed at the immediate situation (cf. Yule 1981, Brown and Yule 1983). They show that what is crucial for accessibility by anaphoric pronouns is not explicit preceding reference as such, but more generally some kind of current prominence of the referent, which may indeed naturally be achieved via explicit preceding reference, but which may also be achieved in other ways³.

The fact that explicit preceding reference to an entity is not a necessary condition for the subsequent accessibility of the entity by means of an anaphoric pronoun falsifies one of Sanford and Garrod's claims. But also their complementary claim about full definite NP's is incorrect. Definite full NP's not only refer to entities that were introduced implicitly, via a scenario, but also to entities introduced via explicit preceding reference. *First* there is a use of full NPs that is very common in newspaper articles – motivated presumably by an attempt of the writer to squeeze new information about a referent into each new mention of it: A man first introduced as, say “the defendant” is subsequently referred to as “the 43-year old banker”, “the father of two teenage daughters”, “the former Brown & Sullivan executive”, etc. And, *second*, we have uses where full NPs, in particular epithets (4a) and classifiers (4b-d), go proxy for anaphoric pronouns (cf. Bolinger 1972). Cf.

- (4)
- a. When Jones returned they ignored {him / the idiot / the bastard / the old goat / the pig}.
 - b. Jones sold his country mansion. Guess who bought the place.
 - c. Venus rose at 9.30, but I didn't see the lovely thing.
 - d. Jones put his furniture up for sale, but no one wanted the stuff.

These cases, as well as those under (3) would show that the association Sanford and Garrod suggest between explicit focus and anaphoric pronouns, on the one hand, and implicit focus

³ The conditions under which a representation of a new referent is entered into explicit focus will not be discussed in this paper. The above observations will however suffice to show that these conditions are considerably more complex than Sanford and Garrod suggested with their “explicit preceding reference” condition.

and definite full NPs on the other, is not as tight and certainly not as exclusive as it would have to be in order to tie down the distinction between the two focus registers.

But despite these problems the fundamental idea of Sanford and Garrod is clear enough. According to the focussing approach to definite reference there is something like a current, limited focus of attention with respect to which definite referential expressions are interpreted. The point is to find out what material, at a given moment, forms part of the focus and how it can be accessed. Garrod and Sanford propose that such focus representations require a differentiated structure and that the differentiation, at least at the level where the distinction between explicit and implicit focus is drawn, may be in straightforward correlation with classes of linguistic expressions that can be used to access these registers. This correlation, I believe, cannot be maintained in the form in which it is proposed. But as for the rest I shall assume Sanford and Garrod's frame of discussion for the purposes of this paper, including the terminology of "explicit" and "implicit focus".

The questions that I want to discuss, and for which I hope to propose at least partial answers, are these: How precisely is the distinction between explicit and implicit focus to be drawn? What is the nature of these representations? And how can these representations be accessed by different linguistic devices of definite reference? – By and large I shall concentrate on what, in view of the form of the utterance, is the focus structure *the speaker* takes for granted, and I shall not worry about the listener's or reader's focus structure or any "mutual" constructs.

1.2 *Marked and unmarked referential devices*

It has long been observed (cf. e.g. Akmajian and Jackendoff 1970) that regular anaphoric reference by means of personal pronouns can be disrupted when the pronouns are stressed. Cf. (5), where the unstressed *he*, but not the emphatic *HE*, is naturally read as coreferential with *Jones*.

- (5) a. When he came home Jones was tired.
b. When HE came home Jones was tired.

This phenomenon is not restricted to personal pronouns but also affects the anaphoric use of definite full NPs, certainly in the epithet cases already mentioned in (4a), repeated under (6a) (cf. Bolinger 1977: 50ff; Bosch 1983:147ff). The final NPs in (6a), but not in (6b), are naturally interpreted as coreferential with *Jones* (though, of course, in an appropriate context, nothing would prevent a more "literal" interpretation where for instance *the pig* in (6a) indeed refers to a pig rather than to Jones). – Capitals are used in the examples to indicate accented syllables. Cf.

- (6) a. When Jones returned they ignored {him / the idiot / the bastard / the old goat / the pig}.
b. When Jones returned they ignored {HIM / the IDiot / the BASTard / the old GOAT / the PIG}.

These observations suggest a close association between accent and Garrod and Sanford's focus distinction in the sense that de-accented definite referential expressions (full NPs and personal pronouns alike) take their referents from explicit focus, and intonationally marked definite referential expressions, personal pronouns as well as full NPs, draw upon implicit focus.

A suggestion of this kind is plausible, first of all, in view of the observation that intonationally marked referential expressions typically signal a change of focus (cf. also Isard 1975, Stenning

1978, Gundel 1980, Maclaren 1981, Ariel 1986, Bosch 1983:58ff). Constructions that have as their typical task to bring about a change in focus, such as cleft sentences, pseudo-cleft sentences, comparative constructions, or one-word answers to wh-questions, usually require marked referential expressions, where the markedness may be intonational or morphological, depending on the language in question. Cf. for instance the pseudo-clefts in (7):

- (7) a. It's {HE / *he} who was late.
b. {ER / *er} ist es, der zu spät kam.
c. C'est {LUI / *il} qui est arrivé trop tard.

If focus change does indeed imply markedness of referential expressions, we may wonder why this should be so: *How could the markedness help the listener to recover the intended referent?*

Markedness is a property of those choices that deviate from the default choice in a given situation. Thus if, as we probably may assume, referential continuity is the default for ordinary discourse (cf. Givón (ed.) 1983, Bosch 1983:205ff), then occurrences of referential expressions whose intended interpretation conforms to the default should be unmarked and those that deviate from the default, and change the focus, should be marked.

This is not yet the full story though. Although deviation from referential continuity implies markedness (cf. (5b) vs (5a) and (6b) vs 6a)), the converse is not true. The pronouns in (7) may be interpreted not only by reference to a man who is not yet in explicit focus, but is there and then being introduced, but also to a man who is in explicit focus and would indeed be the most expectable referent as far as referential continuity is concerned.

Instances of the latter type are distinguished by the fact that they have an identificatory character: the (already focussed) referent of the marked NP is identified as the unique instantiation of the property that is ascribed to it. The corresponding predications carry a presupposition of existence and uniqueness: "It's HE who was late" can successfully express a statement, i.e. can be true or false, only in a mental model (or context model, cf. Bosch 1983, Ch.3) where there is one and only one person who was late. We shall see that this is not a peculiarity of the pseudo-cleft construction but a general characteristic of the particular condition of markedness that is here at issue. An additional property of this use of markedness is that it occurs only in situations where reference resolution is no problem, i.e. where neither search nor selection from a given set of potential referents are required.

1.3 The Descriptive Content Hypothesis

We have seen that markedness of the focus change type may switch off a default interpretation of a definite referential expression. But this is only half of what needs to be done in the interpretation of the expression. The other half is that the intended referent must be recovered. And in this respect the markedness of a referential expression indicates that the descriptive content of the expression is to be used as a criterion in the search for a referent. This function of markedness is expressed in the *Descriptive Content Hypothesis* (for short: DC-hypothesis):

- (i) Whenever the interpretation of a definite referential expression requires search or selection – i.e. when there is currently no unique prominent referent, or there is a unique prominent referent which is not the intended one – then markedness of the referential expression indicates that the descriptive content of the expression is used literally as a criterion for determining the intended referent.

Our question then concerns the relation between a pronoun's gender and its referent. *In what sense does a pronoun's gender describe the pronoun's referent?* The question has a fairly trivial answer for languages like Modern English, where the notion of gender as an independent formal classification of nouns makes little sense, and hence pronoun gender can only correlate with a classification of referents. English personal pronouns are therefore unlikely to offer any decisive evidence for or against the DC-hypothesis. This is not to say that English has no noun gender, but rather that the gender feature of English nouns and pronouns – a number of odd exceptions apart – coincides with their denotational characteristics.

The situation is different when we consider languages where noun gender is an independent formal category, like for instance German. Unlike in English, non-personal referents can be referred to in German by nouns and pronouns of all three genders (masculine, feminine, and neuter), whereas, like in English, persons or personified referents – an odd set of exceptions apart – are referred to by nouns or pronouns whose gender is masculine or feminine according to their sex (cf. Fig. 1).

Our first observation with regard to the German data is that marked pronouns, whose gender, according to the DC-hypothesis, is descriptive of their referent, indeed cannot freely be used for non-personal referents (cf. also Lang 1984:46f, Bosch 1980). When such referents are to be resumed in a situation as in (8) and (9) below, marked pronouns render the sentences unacceptable under the intended coreferential interpretation. When the reference is to persons, however, as in (10), marked pronouns are unproblematic⁵.

- (8) Wenn du die Mutter (f) von dem Bolzen (m) lösen willst, mußt du *IHN (m) festhalten und *SIE (f) nach rechts drehen.

[If you want to loosen the nut from the bolt you must hold it and turn it to the right.]

- (9) Wenn du die Mutter (f) von dem Ventil (n) lösen willst, mußt du *ES (n) festhalten und *SIE (f) nach rechts drehen⁶.

[If you want to loosen the nut from the valve you must hold it and turn it to the right.]

- (10) Der Mann (m) stritt sich mit seiner Freundin (f), weil SIE (f) noch in ein anderes Lokal wollte und ER (m) keine Lust mehr hatte.

[The man had a row with his girl friend, because SHE wanted to go on to another pub and HE didn't feel like it any more.]

Examples (8)-(10) offer clear support for the DC-hypothesis. If the gender of accented pronouns, under the above circumstances, reflects the sex of their referents rather than the grammatical gender of any antecedent nouns, then the pronouns cannot refer to sexless objects such as nuts, bolts, and valves.

⁵ For all I know there is no explanation in the literature for the phenomenon illustrated in (8)-(10). Note, incidentally, that permutations of these sentences that vary the order of the NPs and their syntactic or case roles yield no different results.

⁶ One may be tempted to think that the ungrammaticality at least of the sentence with accented **ES** is independent of our current considerations, because, at least for all I know, **es** can in fact never be accented in German. In situations where marked reference by a neuter personal pronoun in the third person is required, the demonstrative **das** must be used instead. In fact, however, in the context under consideration, **das** is as ungrammatical as is **ES**, so that we may indeed conclude that the ungrammaticality is independent of the general inadmissibility of accented **ES**.

1.5 Conflict between sex and gender

Consider now a case where the grammatical gender of a noun and the sex of its referent conflict. The noun *Mädchen* [girl], which is of neuter gender, is here the stock-in-trade example, but any other diminutive (all of which are of neuter gender) that refers to a person would do just as well. In anaphoric use, some German speakers prefer the feminine and others the neuter pronoun in order to refer to a referent previously described as a *Mädchen*⁷. When it comes to marked pronouns however, the neuter pronoun is out of the question for all speakers. Cf.

(11) Das Mädchen (n) kam noch einmal zurück. {Sie (f)/ Es (n)} hatte den Regenschirm vergessen.

[The girl came back again. She had forgotten the umbrella.]

(12) Das Mädchen (n) kam noch einmal zurück. {SIE (f)^{*}/ES (n)} hatte den Regenschirm vergessen.

[The girl came back again. SHE had forgotten the umbrella.]

Also these cases, like those under (8)-(10), support the DC-hypothesis: the gender of the marked pronouns reflects a classification of their referents, whereas unmarked anaphoric pronouns, as (11) shows, do not fall under this requirement and may reflect the gender of an antecedent noun⁸.

2. Representation and accessibility

The DC-hypothesis, for which we have seen some prima facie evidence in the last two sections, claims that, whenever search or selection of referents is at issue, the gender of marked pronouns is descriptive of their referents, whereas the same is not necessarily true of unmarked pronouns. An explanation for the DC-hypothesis may come from considerations of the nature of the mental representation that is accessed by marked referential devices and the nature of the search process.

When there is a unique expectable referent, and particularly when this referent was just mentioned, then the form of a referential device only confirms that this referent is indeed the intended one. For this purpose a rough classification of referents according to grammatical features of the corresponding antecedent expressions is more than sufficient. But when search or selection are required to recover the intended referent, more finely tuned search devices are needed that can in principle distinguish any two objects. This requires search devices that reflect a classification of the referents. Hence we may expect that the representations on which the processes of search and selection operate are not indexed according to grammatical properties of linguistic expressions but rather according to a classification of the objects themselves.

⁷ There are no clear sociolinguistic or dialectal parameters that govern this preference. An independent parameter, however, which at least sometimes (and not only in German but also in other gender languages) seems to be of influence is the distance between the antecedent and the pronoun: the closer the distance, the more likely we will find formal gender agreement (cf. Duden 1966:630, Corbett 1979). This distance variation is found in the usage of most speakers, independently of whether the speaker's global preference is for a gender based or sex based usage. Cf. further considerations of this matter in Section 2.1 of the text.

⁸ One may be tempted to object also here, as already in the case of sentence (9), that (12) could not offer the required evidence. But, obviously, the same argument offered there (cf. footnote 6) applies also here.

Correspondingly, we may suppose that representations that are typically accessed by anaphoric pronouns, which would generally provide only very small sets of currently highly prominent discourse referents, are not necessarily indexed according to object properties of the referents but certainly according to the more efficient, though somewhat rough, gender and number classification of linguistic antecedent expressions.

This notion about the format of representations is formulated in the *Form-of-Representation hypothesis*, short: FR-hypothesis:

- (ii) a. Representations that are typically accessed by marked referential devices either do not contain linguistic expressions for the entities represented, or at least are not indexed – and hence cannot naturally be accessed – according to formal properties of such expressions, but only according to a classification of the objects represented.
- b. Representations that are typically accessed by unmarked referential devices do not necessarily classify the entities represented, or at least are not indexed – and hence cannot necessarily be accessed – according to a classification of the entities, but can always be accessed according to linguistic properties (such as gender and number) of expressions that have (or could have) occurred in discourse and that refer to the objects represented.

The FR-hypothesis can figure as an explanation for the DC-hypothesis and can also provide the basis for a principled account of the distinction between explicit and implicit focus representations if we correlate the (a)-type representations with implicit and the (b)-type representations with explicit focus. There are, however, two sets observations that form a challenge to the sketch of our account as it stands.

First, there are situations in which gender-determined unmarked anaphoric pronouns are used despite the fact that no linguistic description of the referent has occurred in preceding discourse. If we want to claim that anaphoric pronouns access explicit focus, and we identify explicit focus as a representation of the type described under (ii b), then it is a priori unclear where the required linguistic information in the representation of these referents should come from.

Second, we already noted the case of identificatory markedness, where objects are referred to by marked devices despite the fact that they are explicitly referred to in immediately preceding discourse and hence should be represented in explicit focus. This observation would clearly obstruct a straightforward correlation between marked reference and implicit focus. Furthermore, the FR-hypothesis may need to be amended in order to explicitly account for cases like (10), which seem to require that at least the representations of persons in explicit focus are indexed for at least some object properties (viz. sex).

2.1 Antecedentless anaphoric pronouns

The first point that needs elaboration regards antecedentless occurrences of unmarked anaphoric pronouns which clearly reflect the gender of some noun describing their referent rather than any classification of the referent itself.

Tasmowski-de Ryck and Verluyten (1982) were the first to point out cases like the following ((13) is their example):

- (13) (watching a Frenchman trying to get a large table – *la table* (f) – into his car):

Tu n'arriveras jamais a {la/*le} faire entrer dans la voiture.

[You'll never manage to get it into the car.]

(14) (watching a German trying to move a wardrobe – *der Schrank* (m)):

Wenn du die Kleider nicht rausnimmst, kriegst du {ihn/*sie/*es} nie von der Stelle.

[If you won't take the clothes out, you'll never make it move.]

In these utterance situations the pronouns are without antecedent NPs and still have a clear preference for one grammatical gender to the exclusion of others. The gender of the pronouns in these cases is unrelated to sex, nor does it in any other sense reflect a classification of the referents.

Note, however, that the referent in these cases is clearly in some sense in focus. One may indeed assume that speaker and listener have perceived the referent and have incorporated it into the mental representation of their current environment. The pronouns are clearly anaphoric, not only in the sense that they are de-accented but also in the sense that they refer to a referent in current (explicit) focus. In this respect these cases form no challenge to our claims. The difficulty is rather in the fact that, according to our interpretation of the FR-hypothesis, explicit focus should, and here clearly does, contain a linguistic description of the referent, but that in the cases at hand it is *prima facie* unclear where such a description should come from.

One way of looking at these cases is proposed by Tasmowski and Verluyten (1982). They assume what they call “absentee-antecedents”: noun phrases which “linguistically control” the pronouns but are not found in the text or discourse and must somehow be reconstructed. According to Tasmowski and Verluyten it is these absentee-antecedents that “linguistically control” the pronouns and determine their gender.

But what would these absentee NPs be? Are there not arbitrarily many different nouns or NPs that would denote one and the same thing? When we consider (14), for instance, there is no reason, in abstract, why a wardrobe should not be referred to in German as *das Möbel* (n) [the (piece of) furniture] or even, though in a somewhat derogatory way, as *die Kiste* (f) [the box]. So why should just the masculine gender of *der Schrank* be crucial for the anaphoric pronoun in (14)? If the nouns *Möbel* or *Kiste* were used in immediately preceding discourse in reference to the wardrobe, the gender of the pronoun would indeed be neuter or feminine. The following text, which reads entirely naturally, nicely illustrates such variation:

(15) Als ich *das Auto* (n) kaufte, war *es* (n) erst ein Jahr alt. Dann habe ich *den Wagen* (m) fünf oder sechs Jahre gefahren und eigentlich nie Ärger mit *ihm* (m) gehabt. Voriges Jahr schließlich habe ich *die alte Kiste* (f) dann verkauft, weil *sie* (f) überall anfang zu rosten.

[When I bought *the auto*, it was only a year old. Then I drove *the car* for some five or six years and really never had any trouble with *it*. Last year eventually I sold *the old rattletrap* because *it* started to rust everywhere.]

Our concern in this section however is the situation presumed in (13) and (14), with no explicit description of the referent preceding the pronoun and under the assumption of an unmarked context.

The notion I want to defend in the following links up to Tasmowski and Verluyten's idea that the gender of the pronoun in such cases is indeed determined by a particular noun. More specifically I want to claim that such a noun forms part of the mental representation people form of an object in their perceptual environment, and hence of explicit focus.

This does not imply that one object would always be represented the same way and in conjunction with the same noun. The very same person, for instance, may be represented as a man, a friend, a colleague, a linguist, a teacher, an amateur cabinet maker, a vegetarian, a jazz musician – or, though perhaps less often, as a featherless biped, a naked ape, or simply a

mammal, to name but a few of the many possibilities. The man's actual properties of course remain unchanged under these various representations. The different representations only express a particular currently relevant conceptualization.

Although there is a certain arbitrariness in the conceptualization of a given referent, some of the suggested representations seem in general less likely than others. Who, except perhaps a philosopher, would represent a man as a featherless biped, or a naked ape? And as for the remaining classifications one would probably agree that they rarely compete with each other but have each their appropriate use for appropriate purposes in appropriate contexts. The same is of course true for the somewhat weird representations of our friend as a naked ape or a featherless biped, the only difference being that they will rarely be contextually appropriate.

So perhaps the choice of representation is less arbitrary than it might first have appeared and is, in fact, quite predictable once the context is sufficiently specified. That there is a regular relation between context (in the simple and straightforward sense of a set of contrasting objects) and word-choice was shown experimentally by Ford (cf. Olson 1970), Osgood (1971), and others. Similarly Tversky (1977) has experimentally demonstrated the context dependence of classification. Given a referent and a context, and given a fixed vocabulary, it may therefore not be unreasonable to think that the relations of similarity and contrast among the objects in the context and the relations of similarity and contrast that can be expressed in the available vocabulary will at least determine some small set of descriptions that are more likely descriptions of the referent than others, and they may even determine which is the one most likely – and thus least marked – linguistic description for a particular referent in a particular context.

But apart from context-relative determination of unmarked word choice, there is also a notion of unmarked word choice independent of context. Such unmarked descriptions are Rosch's (1978) *basic level common nouns*. For run-of-the-mill contexts and run-of-the-mill purposes basic level nouns are specific enough to draw the required distinctions and general enough not to make the resulting extension classes too small to be relevant. Thus, for instance, in an unmarked context we would say "Did you see the woman over there?", rather than more generally "the person", "the biped", or "the mammal", or more specifically "the shopper", "the spinster", "the housewife", or "the pensioner".

If these notions of predictability of representation, both independent of context as well as context-relative, are sufficiently strong, the relation between referents and their linguistic representations may well be a predictable relation in both directions: speakers and listeners can not only reliably find the referent for a given description, but they can also construct the appropriate representations, including a particular noun-phrase, for a given referent.

On the basis of these considerations we may claim that in gender languages the gender of an (unmarked) anaphoric pronoun is the gender of the common noun which is the head of the NP that figures in the representation of its referent in explicit focus⁹. – The problem with which we started this section, i.e. the fact that antecedentless anaphoric pronouns in gender languages may require one specific gender to the exclusion of others, is thus solved if we adopt the following *Linguistic Representation Hypothesis* (for short: LR-hypothesis) as an elaboration of the second part of the FR-hypothesis:

⁹ An essentially identical proposal for the explanation of the gender of antecedentless anaphoric pronouns was made in Bosch (1984, 1987) and, independently, in Cornish (1986). Cf. also Tasmowski and Verluyten (1985). The notion that it is the head of the relevant NP that determines pronoun gender I owe to Francis Cornish (personal communication).

- (iii) Representations of entities in explicit focus regularly contain a specific noun or NP expressing a particular conceptualization of the object represented. These nouns or NPs are either derived from NPs that explicitly occur in preceding discourse, or they enter explicit focus as the contextually appropriate or basic level default representations of non-linguistic information.

For the sake of completeness it should be noted that in exceptional cases representations in explicit focus may not contain a noun or NP. As would indeed follow from our above considerations, this is the case when an object is perceived as something (as yet) unclassified. The difference between the two versions of (16), one with *it* and the other with *he*, illustrates the point (cf. Bosch 1983:152-156 for further discussion of such cases).

- (16) (poacher, defending himself):

When the game-keeper appeared from the underwood I thought {it/he} was a wild boar and I shot.

The LR-hypothesis also resolves the problem with the gender of pronouns that link up with antecedents with a grammatical gender different from the sex of their referent, as in the case of *das Mädchen* in example (11). The crucial point in this connection is that anaphoric referential expressions never link up directly with any other referential *expressions* (i.e. antecedents), but always with a mental representation of their referent, which may have been created by the interpretation of an antecedent expression, by inference, or otherwise. The gender of a (referential) anaphoric pronoun is thus determined not by the gender of any overt antecedent but by the gender of the head noun of the NP that figures in the referent's representation in explicit focus. This noun may be identical to an overt antecedent but it needn't be. A re-conceptualization and a corresponding implicit re-description, may replace the NP in the focus representation and hence lead to pronouns with a different gender. Such re-conceptualization becomes the more likely the more information about a referent is activated in memory or added in discourse. Hence the fact (cf. Note 7) that increased distance between pronoun and antecedent makes a determination of pronoun gender by natural rather than grammatical gender more likely. But also near-by pronouns may show the effects of a re-conceptualization, particularly when the overt antecedent is descriptively weak in comparison with either a contextually better motivated or a basic level description. This will often be the case for nouns (particularly diminutives in German) that refer to persons and whose gender differs from the person's sex. Although I may ridicule a man in German as a *Männchen* (n) [little man], the corresponding classification in the focus representation will be of so limited usefulness and hence so short-lived that it is almost immediately overruled by the basic level *Mann* (m) and there is barely a chance that more than one subsequent reference would be by the neuter pronoun *es*, even when no other overt antecedent intervenes.

2.2 **Marked access to explicit focus**

As was pointed out already in Section 1.2, explicit focus can not only be accessed by unmarked but also by marked personal pronouns. This is clearly seen in (17a) and in (18a). Not only are the referents of the marked pronouns in these sentences explicitly referred to almost immediately before but, as the (b) sentences demonstrate, the same referents are also accessible by means of anaphoric pronouns – which is another, and for our purposes sufficient, indication that the referents are in explicit focus. Cf.

- (17) a. Fred can't complain. It's HE who was late.
b. Fred can't complain. He was late.

- (18) a. The man had a row with his girl friend, because SHE wanted to go on to another pub and HE didn't feel like it any more.
- b. The man had a row with his girl friend, because she wanted to go on to another pub and he didn't feel like it any more.

The question with respect to marked access to explicit focus is if these pronouns use their descriptive content.

The difference between (17a) and (18a) is that in the former sentence the marked pronoun can simply pick up the most prominent object from explicit focus, whereas in the latter case there are two very nearly equally prominent referents available one of which must be selected for each pronoun. According to the DC-hypothesis the descriptive content of the marked pronouns would become active in the latter, but not in the former case. There is no way of telling, however, whether or not the descriptive content of the pronouns plays any role here, i.e. whether the referents are chosen according to a the formal features of any nouns that form part of the representation or according to a semantic classification of the referents.

The difference between (18a) and (18b) is that in (18b) the choice among the two referents in explicit focus is taken for granted by the speaker, whereas in (18a) it is not. Similarly for (17a) and (17b): The former sentence emphasizes the fact that it was Fred who was late, and the latter does not. Additionally, and more importantly, the second sentence in (17a) presupposes that in the context at hand there is a unique instantiation of the property of having been late. The sentence is not appropriately used unless the speaker assumes that there was exactly one person who was late. No such presupposition is at issue in (18a).

Let us now consider a parallel situation with non-personal referents in (19) and (20) ((20) is the same as (8) above). Again, the (b)-versions with unmarked anaphoric pronouns only serve to show that the corresponding referents are indeed in explicit focus.

- (19) a. Gestern habe ich diesen Bolzen (m) gefunden. ER (m) war das letzte Beweisstück, das ich noch brauchte.
[Yesterday I found this bolt. IT was the last piece of evidence that I still needed.]
- b. Gestern habe ich diesen Bolzen (m) gefunden. Er (m) war das letzte Beweisstück, das ich noch brauchte.
[Yesterday I found this bolt. It was the last piece of evidence that I still needed.]
- (20) a. Wenn du die Mutter (f) von dem Bolzen (m) lösen willst, mußt du *IHN (m) festhalten und *SIE (f) nach rechts drehen.
[If you want to loosen the nut from the bolt, you must hold it and turn it to the right.]
- b. Wenn du die Mutter (f) von dem Bolzen (m) lösen willst, mußt du ihn FESThalten und sie nach RECHTS drehen.
[If you want to loosen the nut from the bolt, you must HOLD it and turn it to the RIGHT.]

Although the distinction between access via sex or gender does not show for personal referents in (17) and (18), it must show in the domain of non-personal referents in (19) and (20). And so it does. (20a) is ungrammatical on the intended coreferential reading, whereas (18a) is fine. A new observation is that, perhaps surprisingly, not only (17a) – where the reference is to a person – but also (19a) is entirely natural, although in the latter case the referent is not a person and it is a representation in explicit focus that is being accessed.

Why is (19a) acceptable? The DC-hypothesis only claims that markedness signals the use of descriptive content *when search or selection of referents is at issue*. When this is not the case, as in (19a), markedness of referential expressions may fulfill other functions. – But this is not yet sufficient to explain the acceptability of (19a), as the case of (21) shows. Also there we have exactly one prominent referent, and thus neither search nor selection would seem to be needed, but the intended referent is not a person and access via a marked pronoun is clearly excluded. Cf.

- (21) a. Gestern habe ich diesen Bolzen (m) gefunden. *ER (m) lag unter dem Autositz.
 [Yesterday I found this bolt. IT was lying under the car seat.]
 b. Gestern habe ich diesen Bolzen (m) gefunden. Er (m) lag unter dem Autositz.
 [Yesterday I found this bolt. It was lying under the car seat.]

The crucial difference then is the one between (19a) and (21a), and this is a difference in the predicates attached to the marked pronouns that was already noted in Section 1.2. If such predicates carry the presupposition with respect to the current context that there is one and only one object of which they can be truthfully be asserted, and this object is in explicit focus, then this object may be referred to by a marked pronoun. The difference between (19a) and (21a) is that the predicate in the former case, but not in the latter, carries this presupposition of unique instantiation.

Whether or not a predicate has this interpretation can vary from one context to another. If we manipulate the context accordingly, also the predicate in (21) will receive an identificatory interpretation and the coreferential interpretation of the marked pronoun becomes acceptable, as (22) shows. And in situations where a coreferential interpretation with a unique personal referent in explicit focus is forced despite a predicate that would not normally be interpreted as carrying a presupposition of unique instantiation, as in (23), this predicate receives an interpretation that allows the inference that it is indeed uniquely instantiated: the speaker of (23) clearly operates with a mental representation of a unique person who, at a particular time, stood at a particular bus stop.

- (22) Ich hatte schon tagelang nachsehen wollen, was da unter dem Autositz lag. Gestern habe ich diesen Bolzen (m) gefunden. ER (m) lag unter dem Autositz.
 [For days I had been meaning to see what it was that was lying under the car seat. Yesterday I found this bolt. IT was lying under the car seat.]

- (23) This morning I spoke to Fred. HE had been standing at the bus stop.

Although we now have, I believe, a correct description of the relations between markedness of referential devices and access of focus representations, this description does not yet answer the question why marked access to non-personal referents in explicit focus is possible just in case the unique instantiation presupposition holds.

A presupposition is an assumption with regard to the current context representation that is taken for granted. Thus the presupposition of the predicates in (17a) and (19a) demonstrates that there is already a unique object in the (speaker's) focus representation of which the predicate holds: an object represented as “the one who was late” in (17a) and an object described as “the last piece of evidence that I still needed” in (19a). What the respective sentences assert is that these objects are the same as the objects that are represented as “Fred” and “the bolt that I found yesterday”, respectively. And the latter representations are in explicit focus and are accessed by the corresponding pronouns in (17a) and (19a). These identificatory

constructions thus presuppose that the referents of their definite referential expressions are uniquely prominent and hence exclude any need for referent search or selection.

In general then, descriptive content becomes active whenever either search or selection of a referent is required, no matter whether this process is directed at implicit or explicit focus. The markedness of a referential expression, in such a situation, indicates the activation of the descriptive content as a device of search or selection. An identificatory construction excludes search or selection and thus, despite of the markedness of its referential expression, does not make use of the descriptive content of that expression. When there is a unique prominent referent available, then either this referent is resumed by a marked pronoun in an identificatory construction and no descriptive content plays any role or, if the construction is not identificatory and there is a marked referential expression none the less, the prominent referent is rejected and the descriptive content becomes active in the search for another referent.

An unattractive feature of our account so far is that it assumes two distinct and superficially unrelated functions of markedness: the identificatory type and the type that indicates activation of descriptive content. The relatedness is easily seen, however, when we correlate markedness in the first instance with the function of indicating a contrast and then distinguish different forms of contrast:

- (a) Marked reference to *one of several objects in explicit focus* contrasts the intended referent to its actual competitors in explicit focus;
- (b) marked reference to *a unique referent in explicit focus* contrasts the intended referent to *any* potential competitors, that is, to anything in implicit focus; and
- (c) marked reference to *an object in implicit focus* contrasts the intended referent to a more expectable and currently more prominent referent in explicit focus.

Search or selection are plainly required only in cases (a) and (c), hence it is only here that there is any use for descriptive content. Our earlier description of case (b) as *identificatory* follows from this new description: if an object is contrasted (with respect to a given property P that is asserted of it) with *any* potential competitors, then, plainly, this object is the contextually unique instantiation of that property. – The advantage of a description of (b)-type markedness in terms of its identificatory function, and this is why I have preferred this description throughout the paper, is that it implies a straightforward operational test: if the corresponding predicate in the context at hand implies a unique instantiation then we are concerned with a case where the unique explicit focus referent is the intended referent and hence no search or selection are required.

The connections between markedness, descriptive content, and search or selection thus seem reasonably clear. Less clear are the conclusions with respect to the format of representation, particularly in explicit focus. We could indeed link the explicit vs implicit focus distinction directly to a strong version of the FR-hypothesis: explicit focus is indexed as to linguistic descriptions of the objects represented and implicit focus is indexed for object properties. This would however imply that explicit focus could only contain one entity at any one time and no processes of selection – which would use the descriptive content of the referential expression – could operate on it. In that case, however, the indications for whether or not an entity is represented in explicit focus which we used throughout this paper could not be maintained: more than one object may have been explicitly referred to immediately before, and more than one entity may be accessible at any one moment by anaphoric pronouns. Maintaining these indications for what is and what is not in explicit focus implies that explicit focus may contain more than one entity.

It may seem preferable, therefore, to give a weaker interpretation to the FR-hypothesis and to stipulate that at least some referents, i.e. persons and personified referents, are indexed in explicit focus not only by their linguistic descriptions but also by their object properties. Such a stipulation could explain the difference between the successful references in (18a) and the unsuccessful ones in (20a), but is somewhat unattractive because it postulates a different representation format for personal and non-personal referents. The spirit of the suggested interpretation of the FR-hypothesis can however be preserved without this drawback.

Note, first, that we do not need the full set of object properties, but only high level taxonomic properties of the kind that also figure in selection restrictions and thus may arguably be regarded as ‘formal’ properties. In fact, as far as our data are concerned, the semantic features PERSONAL/NON-PERSONAL and MALE/FEMALE would be sufficient. When these taxonomic features are represented with *all* entities in explicit focus the format of representation is the same for personal and non-personal referents. These representations are still distinct from those in implicit focus, which do not just contain some high level taxonomic features but all the currently available information on their objects.

A decision for the representation of such high level semantic features in explicit focus also for non-personal referents is empirically supported also by the observation that marked personal pronouns in English may select from explicit focus not just on the basis of the male vs female distinction (the representation of which is indeed limited to personal referents) but also on the basis of the person vs non-person distinction; this shows that for non-personal referents at least one semantic feature, NON_PERSON, must be represented in explicit focus. Cf.:

- (24) a. Pete never got on very well with his last car. HE was a bit of a racer and IT was a friendly old diesel.

The difference between the explicit and implicit focus representation format, apart from the fact that only explicit but not implicit focus is indexed for linguistic representations of its objects, then, in a sense, is a difference of degree: indexation according to very general taxonomic information (expressible in terms of semantic features) in explicit focus, and, in implicit focus, indexation for just about any information about the object that is available.

3. Conclusions

Let me sum up the findings presented in this paper. We have distinguished between situations in which a referential expression can link up to a unique prominent representation in explicit focus and situations in which the expression needs to select from several (nearly) equally prominent representations in explicit focus or needs to search for a suitable referent in implicit focus. In the first condition the descriptive content of the expression remains irrelevant and in the latter two conditions it is crucial for referent retrieval. The activation of the descriptive content is always indicated by markedness of the referential expression and we find markedness always in this function when search or selection are required. When however there is no need for search or selection and there is already a unique prominent referent, markedness may still occur, but only in identificatory constructions and without activation of descriptive content.

These regularities are in part explained by the different format of representation in explicit and implicit focus. Explicit focus, which contains representations for all entities that are accessible by means of unmarked anaphoric pronouns, is indexed for grammatical properties of contextually appropriate or default descriptions of its objects, or, possibly, descriptions that have actually occurred in discourse. Additionally explicit focus is indexed with respect to high level taxonomic features of these objects themselves. Implicit focus, on the other hand, is indexed only according to a classification of the objects represented, but this classification uses

all information available and not just the higher levels of the taxonomy that we find in explicit focus.

These conclusions ought to be treated with some care in view of the fact that we have considered systematically only a rather small set of referential devices. I have not discussed the conditions under which an object enters explicit focus, nor have I considered any devices that are active in the selection of referents for unmarked anaphoric pronouns from a set of objects in explicit focus. What has been presented here, then, is rather considerations of the explicit vs implicit focus distinction as put forward by Sanford and Garrod and by no means pretends to be a complete proposal for focus representations. In view, however, of what we have learnt about implicit focus, it seems doubtful now that the implicit vs explicit distinction should indeed be viewed as a distinction within short term working memory. Implicit focus has come to look much more like a partition in semantic memory.

References

- Akmajian, A. and Jackendoff, R. (1970): Coreferentiality and Stress. *Linguistic Inquiry* 1.
- Ariel, M. (1986): Referring and Accessibility. (Conference Paper, Tel Aviv. 1 April, 1986).
- Bolinger, D. (1972): *Degree Words*. The Hague: Mouton.
- Bolinger, D. (1977): *Pronouns and Repeated Nouns*. Indiana University Linguistics Club. Bloomington (in part repr. in Givón (ed.) (1979)).
- Bosch, P. (1980): Intonation und Anapher (Abstract). In: *Linguistische Arbeiten und Berichte*. Freie Universität Berlin, FB 16. Berlin.
- Bosch, P. (1983): *Agreement and Anaphora. A Study of the Role of Pronouns in Syntax and Discourse*. Academic Press. London.
- Bosch, P. (1984): Coherence and Cohesion (Paper presented at the International Conference on Text Coherence, ZiF, Bielefeld, 15th-19th Oct, 1984. To appear in the Proceedings).
- Bosch, P. (1987): Pronouns under Control? A Reply to L. Tasmowski and P. Verluyten. *Journal of Semantics* 5:65-78.
- Brown, G. and Yule, G. (1983): *Discourse Analysis*. Cambridge University Press. Cambridge.
- Carpenter, P.A. and Just, M.A. (1977): Integrative Processes in Comprehension. In: D. LaBerge and S.J.Samuels (eds.): *Basic Processes in Reading: Perception and Comprehension*. Lawrence Erlbaum. Hillsdale, N.J.
- Clark, H.H. and Clark, E.V. (1977): *Psychology and Language. An Introduction to Psycholinguistics*. Harcourt Brace Jovanovich. New York.
- The Concise Oxford Dictionary of Current English* (1976) Sixth Edition. J.B. Sykes (ed.). Clarendon Press. Oxford.
- Corbett, G.G. (1979): The Agreement Hierarchy. *Journal of Linguistics* 15:203-224.
- Cornish, F. (1986): *Anaphoric Relations in English and French*. Croom Helm. London.
- Duden. Grammatik der deutschen Gegenwartssprache* (1966). 2. vermehrte und verbesserte Auflage. Bearbeitet von Paul Grebe et.al. Bibliographisches Institut. Mannheim.
- Garrod, S.C. and Sanford, A.J. (1982): The Mental Representation of Discourse in a Focused Memory System: Implications for the Interpretation of Anaphoric Noun Phrases. *Journal of Semantics* 1:21-41.

- Givón, T. (ed.) (1979): *Discourse and Syntax* (= *Syntax and Semantics* vol. 12). Academic Press. New York.
- Givón, T. (ed.) (1983): *Topic Continuity in Discourse: A Quantitative Cross-Language Study*. Benjamins. Amsterdam.
- Grosz, B.J. (1981): Focusing and Description in Natural Language Dialogues. In: Joshi et al. (eds.), *Elements of discourse understanding*. Cambridge: Cambridge University Press.
- Gundel, J.K. (1980): Zero-Anaphora in Russian: A Case of Topic Prominence. In: Kreiman and Ojeda (eds.), *Papers from the parasession on pronoun and anaphora*. Chicago, Ill.: Chicago Linguistic Society, University of Chicago.
- Hobbs, J.R. (1979): Coherence and Coreference. *Cognition* 3:67-90.
- Isard, S. (1975): Changing the Context. In: E.L. Keenan (ed.): *Formal Semantics of Natural Language*. Cambridge: Cambridge University Press.
- Jarvella, R.J. and Klein, W. (eds.) (1981): *Speech, Place, and Action. Studies in Deixis and Related Topics*. Chichester: John Wiley.
- Joshi, A.K., Webber, B.K., and Sag, I.A. (eds.) (1981): *Elements of Discourse Understanding*. Cambridge: Cambridge University Press.
- Karttunen, L. (1976): Discourse Referents. In J.D. McCawley (ed.), *Notes from the linguistic underground*. Syntax and Semantics, Vol. 7. London and San Diego: Academic Press.
- Kreiman, J. and Ojeda, A.E. (eds.) (1980): *Papers from the Parasession on Pronouns and Anaphora*. Chicago Linguistic Society. University of Chicago. Chicago, Ill.
- Lang, E. (1984): *The Semantics of Coordination*. Benjamins. Amsterdam.
- Linde, Ch. (1979): Focus of Attention and the Choice of Pronouns in Discourse. In: Givón (ed.) (1979).
- Maclaran, R. (1981): Demonstratives: The Role of Focus in Discourse Comprehension. LAGB conference lecture, April 1981.
- Mann, W.C. and Thompson, S.A. (1986): Relational Propositions in Discourse. *Discourse Processes* 9.
- Marslen-Wilson, W., Levy, E., and Tyler, L.K. (1981): Producing Interpretable Discourse: The Establishment and Maintenance of Reference. In: Jarvella and Klein (eds.).
- McCawley, J.D. (ed.) (1976): *Notes from the Linguistic Underground*. Syntax and Semantics, Vol. 7. London and San Diego: Academic Press.
- Moxey, L. and Sanford, A.J. (1987): *Journal of Semantics* 5.
- Olson, D.R. (1970): Language and Thought: Aspects of a Cognitive Theory of Semantics. *Psych.Rev.* 77:257-273.
- Osgood, C.E. (1971): Where Do Sentences Come From? In: Steinberg and Jakobovits (eds.).
- Partee, B.H. (1970): Opacity, Coreference, and Pronouns. *Synthese* 21:359-385.
- Postal, P.M. (1969): Anaphoric Islands. In: R.I. Binnick, A. Davison, G.M. Green, and J.L. Morgan (eds.): *Papers from the Fifth Regional Meeting of the Chicago Linguistic Society*. Chicago Linguistic Society. University of Chicago. Chicago, Ill.
- Redeker, G. (1986): *Language Use in Informal Narratives. Effects of Social Distance and Listener Involvement*. Diss. Berkeley: University of California.

- Rosch, E. (1978): Principles of Categorization. In: E. Rosch and B.B. Lloyd (eds.): *Cognition and Categorization*. Erlbaum. Hillsdale, N.J.
- Sanford, A.J. and Garrod, S.C. (1981): *Understanding Written Language. Explorations of Comprehension Beyond the Sentence*. Chichester: John Wiley.
- Sanford, A.J., Garrod, S.C., Lucas, A., and Henderson, R. (1983): Pronouns Without Explicit Antecedents? *Journal of Semantics* 2:303-318.
- Steinberg, D.D. and Jakobovits, L.A. (eds.) (1971): *Semantics. An Interdisciplinary Reader in Philosophy, Linguistics, and Psychology*. Cambridge UP. Cambridge.
- Stenning, K. (1978): Anaphora as an Approach to Pragmatics. In: M. Halle, J. Bresnan and G.A. Miller (eds.): *Linguistic Theory and Psychological Reality*. MIT Press. Cambridge, Mass.
- Tasmowski-De Ryck, L. and Verluyten, S.P. (1982): Linguistic Control of Pronouns. *Journal of Semantics* 1:323-346.
- Tasmowski, L. and Verluyten, S.P. (1985): Control Mechanisms of Anaphora. *Journal of Semantics* 4:341-370.
- Tversky, A. (1977): Features of Similarity. *Psych.Rev.* 84:327-352.
- Tyler, L.K. and Marslen-Wilson, W. (1982): Processing Utterances in Discourse Contexts: On-line Resolution of Anaphors. *Journal of Semantics* 1:297-314.
- Wasow, T. (1982): Anaphoric Relations in English (diss. MIT).
- Yule, G. (1981): Interpreting Anaphora Without Identifying Reference. *Journal of Semantics* 1:315-322.