Interactive aspects of reference assignment in conversations

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We propose a model of reference that contrasts with standard linguistic approaches in that it focuses on the role of interaction in reference, arguing that referring expressions in conversations are not designed for interchangeable audiences but rather exploit the common ground between partners. Our model also differs from psycholinguistic approaches in that it uses conversational data, since critical aspects of natural conversations are absent from laboratory tasks used so far and thus are not captured by current models. Examples from conversations are presented to demonstrate that speakers often try to manage the accessibility of a problematic referent to an addressee by presenting a context for it as well as a referring expression, even at the cost of syntactic orthodoxy. We also present examples demonstrating that partners negotiate as to what representation is good enough for present purposes and whether that has been achieved. While strategies may vary as to explicitness, we believe these negotiations underlie all formulations of referring expressions.

1. Introduction

In any communication, one major challenge is for the speaker to find some means to convey the identity of persons, places, events, and ideas so that the addressee is able to establish an appropriate representation. It is an even bigger challenge to develop theoretical models that account for the fact that communicators are generally fairly successful at this task. Linguistic ap-
approaches to this problem tend to focus on the use of specific lexical items, such as the choice of a definite versus an indefinite noun phrase, but they largely ignore the interactive aspects of establishing the identity of a referent.

Psychologists such as Clark (1992, 1994, 1996) and Krauss and Fussell (Krauss and Fussell 1991; Krauss, Fussell, and Chen 1995), on the other hand, focus on the interactive discourse strategies that are used to establish reference, but their evidence comes mainly from severely constrained communicative tasks such as the tangram-matching task. While such tasks demonstrate clearly several basic aspects of collaboration in referring, we believe they do not include some important aspects that are critical to referring in everyday conversations.

We will focus on two aspects of reference negotiation: facilitating the partner's access to referents by the presentation of relevant context, and negotiating as to what constitutes a good enough representation. Our data consists of conversations between pairs of friends and pairs of strangers who chat about a variety of preassigned topics. We believe such conversations permit us to analyze more fully the strategies used in everyday conversations.

In the following we shall briefly sketch first some linguistic and then some psychological approaches to reference assignment before presenting our own model which tries to build on the two approaches.

2. Linguistic treatments of reference

Among the linguists, it is mainly the semanticists who have tried to account for how referring expressions are formed and interpreted. Several approaches to this area have been proposed, especially with regard to the role of context.

During the period when linguists hoped to create formal models of autonomous language systems, an approach to reference which we will call the traditional model was proposed. In such a model, as summarized by Hurford and Heasly (1983: 34-41), speakers create a referring expression by selecting noun phrases such as the man and predicates such as in the corner as needed to identify an intended referent. It appears to be taken for granted that the goal of a referring expression is to identify a unique referent.

In general it was considered that the meanings of words and sentences are independent of the context. However, the meanings of deictics and definite articles posed a special challenge. In most discussions of the traditional model, deictics are recognized to be an exception to the general principles of the model, but they were thought to be limited to a relatively small and identifiable subarea of reference, consisting of pronouns such as i/you, us/them; demonstratives such as this/that; spatial demonstratives such as here/there; temporal demonstratives such as now/then; and extensions of the above such as the man beside me, tomorrow, etc. In fact, some traditional models, such as Kempson's (1977) truth-conditional model, attempted to limit the scope of semantics so as to exclude context altogether.

More recently, discussions of semantics and reference do recognize the importance of context for models of reference. Both semanticists such as Lyons (1995) or Saeed (1997) and pragmatists such as Green (1996), Thomas (1995), or Grundy (1995) argue that one cannot ignore the role of context in reference. Others go further and make context central to the conceptualization of reference. For example, Roberts (1993) directly argues against truth-conditional models and proposes an alternative model, in which referring expressions serve to direct attention by creating a figure-background dynamic between a concept and its context.


Linguists from the sociological tradition, or more specifically the conversation analysts, have always argued that interaction is central to language (e.g., Sacks, Schegloff and Jefferson 1974; Schegloff, Jefferson and Sacks 1977). To date, their main impact has been on the treatment of issues in the organization of conversations, such as turn-taking and repair rather than on semantics. However, in one rarely cited paper, Sacks and Schegloff (1979) proposed a model for reference to persons in conversations, in which they describe the principles (preference for minimal forms and preference for forms the audience will recognize as referring to a given individual) that facilitate the economical assignment of reference to persons. However, they have not, to our knowledge, proposed a more general model of the role of interaction in reference.

More recently a number of linguists from different backgrounds, including conversation analysts but also traditional linguists, have attempted to demonstrate the inter-relationships between syntax and interaction. In the
introduction to their volume, Ochs, Schegloff, and Thompson (1996: 4) argue that grammar cannot be fully understood separately from its role in social interactions. While the authors of that volume paid only occasional attention to issues of reference, several of the concepts developed in this tradition have implications for the relation between reference and interaction. For example, a central concept for several papers is that one function of syntax may be to enable the addressee to project (i.e., to tacitly predict) forthcoming structures, either within sentences or in the discourse level.

Ochs, Schegloff, and Thompson (1996) propose that there is much yet to explore concerning the role of interaction in syntax. We believe there is equal potential for exploring the role of interaction in the assignment of reference. That is, a similar type projectability may function for meaning assignment, whereby, for example, the activation of one referent may project the activation of related referents and thus help determine its interpretation.

While current discussions of reference do not deal explicitly with the role of interaction, we believe that the models proposed are implicitly interactive in that they require each partner to create, update, and continually consult a model of his or her interlocutor’s current mental representation of the text and context. To do so requires that the partners be sensitive to each other’s knowledge and perspective in general but also that they give each other regular cues concerning both the nature of their own representations and their beliefs about their partners’ representations (see also Clark 1996). For example, in regard to Robert’s (1993) model mentioned above, we would argue that a speaker could not successfully direct his partner’s attention by a referring expression unless he had some model of the addressee’s mental representation of both the context and the incoming text.

A recent volume on reference (Fretheim and Gundel 1996) includes analyses built around the interrelated concepts of accessibility (Ariel 1996), identifiability plus accessibility (Chafe 1996), inferability (Gundel 1996; Hellman 1996) and hearer-status plus centering (Walker and Prince 1996). While each of the above-mentioned papers makes a separate contribution to the study of reference, they appear to us to have in common a dependence on the representation each partner makes of the other’s current and potential representations of scenarios and concepts.

Similarly, recent discussions of anaphora (Fox 1987, 1996) appear to us to depend critically on the judgments partners make about how a partner will represent both the context and the text. In traditional models, there was an attempt, parallel to that of writing syntactic rules, to specify how reference is assigned according to identifiable features of the text plus identifiable rules. However, as Fox notes in her introduction (1996: vii), current work focuses on the relation between discourse-pragmatic features and reference tracking. For example, such measures as recency of mention only partly predict the use of anaphora; rather, speakers seem to use more abstract notions of topicality, apparently depending on assumptions concerning what the hearer is attending to at a given point in the discourse.

3. Psychologists’ approaches to reference and to interaction

While attempting to explain the processes involved in text comprehension, cognitive psychologists have dealt both directly and indirectly with issues in reference assignment. A central goal has been to provide a model of knowledge representation in general and to use it to explain comprehension and memory for text. Traditional models, such as early propositional representation models (e.g., Kintsch 1974) share much with the traditional semantic model in that they hoped to describe the processes that make it possible for people to derive meaning directly from text.

However, newer models have proposed quite different mechanisms of knowledge representation. One important approach is known as a mental model approach, originally proposed by Johnson-Laird (1983) and developed in various ways by others such as Glenberg, Kruley, and Langston (1994) and Garrod and Sanford (1994). (See also Kintsch’s situation model (1994).) In this approach, a central process in text comprehension is the construction by the addressee of a dynamic mental representation based on the situation portrayed. Such a representation has some characteristics different from the processing of the text itself. These models incorporate earlier notions of the role of schemas (e.g., Bransford 1979) and scripts (e.g., Schank and Abelson 1977), but they go beyond them in proposing that the representation is in some sense a simulation of a scenario in a possible world. For example, to interpret a narrative about car repairs, a listener would construct a dynamic representation of the events described. In doing so, she would activate relevant schemas and scripts from her experience and use them to interpret incoming material. In such a model, reference assignment would be based largely on what entities are part of the activated schema, either as generic
slot-fillers (generic auto mechanics) or specific fulfillment of those slots (a specific guy who always fixes my friend's car), but it would also depend on the role each referent is playing at a given point in the scenario. For example, Glenberg et al. (1994) demonstrated that a referent, *sweatsuit*, might remain accessible or not depending on whether a character is described as putting it on or taking it off. Its mention in the text does not itself control its activation; rather, the listener's portrayal of its current role also determines its status.

A radically different but increasingly important alternative model of knowledge representation, the connectionist approach, argues instead that only low-level processes are needed to explain phenomena of perception and comprehension (e.g., Rumelhart and McClelland 1986, Rumelhart 1991). A concept is said to consist of the activation of a pattern of subsymbolic features that have been frequently or recently associated with each other. The context is not separated from the other features of the pattern. Various weak constraints provide weightings that selectively facilitate or inhibit the activation of the features. Reference assignment would then consist of the activation of a given set of features; e.g., the concept labelled *auto mechanic* comprises those features associated jointly with repair shops in general, with cars, with service personnel, etc. While both models have much potential for addressing a number of general issues in referring strategies and reference assignment, they have not yet dealt directly with those topics. Our analyses will take some elements from each model, but we will not attempt in this paper to reconcile the two approaches.

Some psycholinguists have attempted to deal directly with reference, but they have, of course, approached the topic quite differently from linguists. Their main concern has been to demonstrate that the use of different forms and strategies for reference are a function of the conditions under which they are produced. To do so, they have created tasks that allow the researcher to know what referent was to be identified for a situation and what item was selected by the partner to fulfill that referring expression, as well as what referring expressions were used by a speaker.

The most popular task has been the tangram matching task, used often by Clark and his associates (e.g., Clark 1992) and also by Krauss and Fussell and associates (e.g., Krauss and Fussell 1991). Partners are each given the same set of 12 semi-nonsense figures in an array, but the figures are in a different order. The director must describe each figure in his array so that the partner (matcher) can identify it and place it into the same position. The task is repeated over several trials, each time with the same items provided in a new order.

Clark and Fussell and Krauss have been able to convincingly demonstrate several expected characteristics of referring. For example, directors typically introduce a figure with an indefinite article but use the definite article for subsequent mentions of it. Referring expressions also become reliably more efficient over trials, as measured by number of words used. Both these changes are attributed to the increased amount of common ground between partners (e.g., Clark and Wilkes-Gibbs 1986/1992).

Clark and Wilkes-Gibbs have also described various interactive referring strategies. Addressees may contribute directly to the referring expression, either because they anticipate part of it and interrupt or overlap with the speaker, or because the speaker may appeal to the addressee for help. Speakers may depend heavily on addressee feedback, as when a speaker presents a referring expression in installments, waiting for acknowledgment of each segment before proceeding.

Clark has given an increasingly central role to interaction. In a recent book (1996), he has organized his presentation around the central thesis that language is a joint action. In his model, each utterance by a speaker is not considered complete as a contribution until it has been grounded by a response from the addressee; and speakers are said to signal the listener as to the type of acknowledgment that is expected. Thus the interaction is continually integrated into the conversation. In presenting this model, Clark supplemented evidence from his earlier laboratory research with invented examples and excerpts from various recorded or remembered conversations. However, he did not distinguish between strategies observed in laboratory tasks and those observed in natural conversations, nor did he discuss some strategies we believe are critical to natural conversations (see discussion below).

4. Outline of our model

We consider all of the approaches described above to have contributed significantly to our understanding of reference assignment in general. However, we believe much work remains to be done to provide a full description of how partners establish reference assignment in a variety of
contexts, including in everyday conversations.

We argue that reference is best seen as interactive, i.e., as negotiated between partners. Under ordinary circumstances such negotiation is implicit in the speaker’s choice of a referring expression and the addressee’s conventional form of acknowledgment. However, when partners anticipate or discover problems, the negotiation may be explicit. For purposes of the present discussion, we will distinguish three different levels of cooperation between speaker and hearer in mutually establishing the referent of a linguistic expression. First, the speaker may use referring expressions whose interpretation depends critically on the partner’s common ground. This includes structures such as unelaborated noun phrases, proper names, or pronouns (I live on campus, I live in Irvine, or I live here). Second, the speaker may anticipate a potential problem and either check proper understanding (e.g., by the use of rising intonation on the problematic expression) or attempt to provide an accessible context in order to make the target referent more accessible. Third, the addressee may participate actively in establishing a referent by asking for clarification, by supplying part of the referring expression himself, or by participating in a negotiation as to whether an appropriate reference assignment has been made.

Another way to think of our model is that we wish to extend the concept of context to include not just the observable linguistic and non-linguistic context but also (1) the common ground of community and personal experience that partners assume as background for the interpretation of utterances (as discussed in Clark 1994 and in Krauss and Fussell 1991) and (2) the current and constantly changing representation that each person believes his or her partner has created. While partners can never know exactly what their partner knows in general or the information currently accessible to them, the success of their communication depends on their ability to create and continually update models of each other’s beliefs (Jucker and Smith 1995).

4.1. Contrast with standard linguistic models of reference

First, we would like to contrast our interactive model with the standard linguistic model of reference. In the standard model, and even in some newer models, listeners appear to be treated as though they are interchangeable. The only requirements for successful communication appear to be that they share mastery of the language and an ability to use salient features of the context to interpret utterances. Thus, the referring expression the man in the corner assumes that the addressee, whoever it is, will be able to identify a unique referent and interpret the expression accordingly.

However, in an interactive model, both the formulation of the referring expression and the interpretation given it will be determined in part by the assumptions held mutually by the speaker and the addressee. First, the standard model assumes that there must be a unique referent and that the expression the man in the corner is appropriate and interpretable only when there is present only one man in any observable corner. However, it is easy to imagine several different situations in which the addressee may have no problem interpreting a given referring expression even when there is no unique referent. For example, a speaker might be in a room in which there are two corners with a man in each (or a corner with two men in it), one man being a mutual friend of the speaker and addressee and the other being a stranger. The speaker might admire the addressees’s new diamond ring and declare The man in the corner is a lucky man without fear of misinterpretation. Similarly, the assertion The man in the corner is visiting from Switzerland would not be problematic. In each case, the common ground between partners allows them to make an appropriate interpretation, even when the standards for unique reference have not been met. Second, we believe that there are an unlimited number of unique characteristics of any object, and the selection of which one to use in a referring expression is dependent on beliefs about the partner’s knowledge. In informational terms, it might be equally appropriate to refer to a given man as the man from Switzerland, the man who gave the colloquium, or the man who came late to the party, but which one is selected in a natural conversation will depend on which characteristic is both known to the partner and salient to her (see also Clark 1996). Again, the same referring expression could not be used with interchangeable partners. In natural conversations, we believe that the speaker does not select a referring expression that would identify a unique referent to interchangeable listeners but rather that reference assignment is successful only because of partners’ shared assumptions about each other and the context; i.e., referring expressions exploit common ground.

We have argued elsewhere (e.g., Jucker and Smith 1996) that speakers use a variety of implicit and explicit means to negotiate their common ground. First, we believe that selections made at each level of language use – prosody, lexical choice, syntax, and discourse strategy – are based on
assumptions about the partners' personal or communal common ground. Second, we believe the speaker's choices provide cues to the addressee about those assumptions. And third, the addressee's response provides cues as to how well those assumptions have been met. In the present paper, we argue further that reference formulations, including seemingly routine ones such as those given below, are inherently interactive in that (1) they are formulated for different audiences according to assumptions about what representations the addressee will be able to make, and (2) they signal to the addressee what assumptions the speaker has about the partner's knowledge and thereby invite correction if needed.

A: Where do you live?
B₁: I live in the pink house.
B₂: I live in Long Beach.
B₃: I live in California

In the example above, each of the different referring expressions would work for quite different audiences, depending on the context and prior knowledge of the audience. We believe the assumption of audience-sensitivity in cases like this is so strong that (1) an addressee is confused or offended if a speaker fails to tailor the message for him or her, and (2) a speaker is confused or offended if the addressee fails to give feedback when an inappropriate referring expression is used.

4.2. Contrast with previous psycholinguistic models of reference

Second, we would like to go beyond the interactive models previously developed in the context of laboratory tasks. We believe there are at least two important aspects of referring in natural conversations that have not been addressed directly and that would not be revealed in laboratory tasks used so far. First, a speaker must get an addressee to select a target referent from among an essentially unlimited set of potential persons, places, or things, usually without the benefit of any relevant physical cues. We will call this managing the accessibility of a target referent. Second, partners must collaborate to determine what type of representation of the target referent is appropriate, given both the current purposes of the conversation and evidence concerning the addressee's ability to construct a representation. We will call this negotiating as to what constitutes a good-enough representation.

4.2.1. Managing the accessibility of a referent

In discussions of text comprehension (e.g., Garrod and Sanford 1994; Glenberg, Kruley, and Langston 1994), it is considered well established that the context determines which of various possible interpretations of a referring expression will be processed and how rapidly an interpretation will be accessed. Yet little attention has been paid to the implications of this principle for models of text production. We propose that, in natural conversations, speakers tacitly follow these principles; that is, that they will attempt to manage the accessibility of a referent by presenting relevant contexts as needed.

In the laboratory tasks used so far to study reference, the speaker has no need to manage the accessibility of referents. In the tangram task, the universe of referents is severely limited, all potential referents are physically present to both partners, and the referents are known by each partner to be present in common. Also, the referents are present during both the formulation of the referring expression by the speaker and the reference assignment by the addressee, so there are no potential problems in differential amounts or contents of memory for the figures.

In contrast, partners in most everyday conversations need to refer to any of a large number of people (my daughter), places (the freeway), events (when you heard that funny noise), things (a waterpump), or concepts (a bad day). Only rarely are there any physical cues for the referent. Further, the speaker will often have no direct information as to whether the addressee had prior experience directly relevant to the referent; e.g., whether the relevant information such as Bora Bora is 'available' to the partner. If not, the partner will have to create the referent from other information such as near Tahiti. Finally, even when the speaker has reason to believe the addressee has previously encountered and stored information about the referent, there is no way to guarantee that the partner will be able to access the information using the same cues that the speaker would use; i.e., the speaker still has the challenge of making the target referent accessible. Thus, in everyday conversations, between strangers or even between friends, partners will have to collaborate to determine the availability of referents and to provoke access to them.

4.2.2. Negotiating as to what constitutes a good-enough representation

In communicative tasks such as tangram matching, the researcher's instructions define the end of a reference event as the point at which the matcher selects a figure. Although there may be repeated trials with the same figures,
the occasions when the addressee needs to access the referent are also determined by the researcher and are clearly defined to the participants. On each trial, the selection of a unique action serves as a definition of a good enough reference assignment.

However, partners in everyday conversations may have to continually negotiate what type and level of representation is appropriate for the purposes of their conversation. Addressees will often make a perfectly satisfactory reference assignment despite vague or ambiguous referring expressions. Other times, the addressee will appear to be satisfied that he has understood a referring expression, but the speaker may find reason to initiate a repair. Further, what appears to be a good enough representation at one point may turn out to be inadequate for the purposes at a later point. A particularly dramatic demonstration of the role of interaction occurs when partners come to a tacit agreement that a representation is good enough for the present purposes, even though it may not have produced the expected signs of a successful assignment, such as giving the name of a person to be discussed.

The language we use in the present paper is intended to be neutral as to whether such strategies are executed with awareness; they may be thought of as part of tacit or procedural knowledge of language.

5. Data constraints

Because natural conversations ordinarily demand strategies that are not relevant to standard laboratory tasks, we believe it is important to analyse conversations in more natural contexts. While we do not believe there is a discrete class of conversations that qualify as natural while others do not, we do believe that conversations are more or less constrained in terms of topics, setting, and/or goals. Those conversations studied with the laboratory tasks may be thought of as severely constrained in all of the above ways. (Indeed, this is what allows systematic comparisons of their characteristics.) While the impact of these constraints has not yet been systematically studied, we believe there may be several important ways in which conversations with fewer constraints (so-called natural conversations) may differ from those with more constraints (e.g., the tagram task). While we would hesitate to call our conversations completely natural or unconstrained by the research setting, we believe they do allow us to study strategies that are important components of everyday conversations.

Our data come from conversations between students from California State University, Long Beach, who volunteered or received extra credit for participating in recorded conversations. Before beginning the conversation, each partner completed a brief demographic questionnaire that included a self-description of their prior relation as friends, acquaintances, or strangers. They were first asked to write for five minutes and then were assigned one of a small set of topics (travel, movies, sports, karate, and opera) to discuss for five minutes. In the present paper, most examples will come from two pairs each of strangers and of friends who chatted and then discussed travel or movies as their topic.

6. Three interactive levels of reference assignment

A central point of our model is that any referring event contains a set of elements, all of which are negotiated either implicitly or explicitly. The formulation of the referring expression by the speaker is, of course, one such element. Following Clark (1996), we believe the response of the addressee concerning the apparent success of the reference assignment is also a critical element. We will suggest, in addition, that partners continue to monitor and revise both their expectations about the reference assignment that should be achieved and their confidence that it has. We believe that each of these elements is under constant negotiation, but such negotiation is usually implicit and becomes transparent only when a normal assumption is violated.

First, the speaker's choice of referring expressions depends on judgments of the common ground between partners and is, thus, audience-sensitive. However, the role of the audience-sensitivity may or may not be transparent. If the speaker correctly assumes certain information to be common ground, either because of communal experience or because of personally shared experience (Clark 1994), that assumption is implicitly present in the choice of the referring expression and need not be explicitly negotiated. Similarly, the addressee may acknowledge the utterance in a conventional way so that his or her part in the negotiation is also taken for granted by the observer.
If, on the other hand, the speaker is uncertain as to whether relevant background information is common ground, he or she may try to obtain information about either the background information or the success of the referring expression. The speaker may use either indirect or direct means for checking that information, and, in turn, the addressee may respond either directly or indirectly in such a way as to indicate the success of the reference assignment. Simple deviations from conventional acknowledgments may often convey feedback about the fate of the assignment. An especially interesting alternative for the speaker who anticipates problems is to try to facilitate or prime the addressee's access to the referent, by presenting extra context designed to help activate the addressee’s relevant prior knowledge.

Finally, if either party suspects a problem, they may confer openly about the reference assignment. In such cases, of course, the role of interaction or negotiation is transparent. As discussed above, both Clark and Krauss and Fussell have described the interactive strategies used by their research participants. However, there remains the challenge to characterize the whole set of issues the partners must deal with in a natural conversation, both when a reference assignment is made initially and when it becomes relevant subsequently. In fact, we believe that cases demonstrating explicit negotiation, e.g., extended repair sequences, merely make transparent the issues that must be implicitly negotiated in more routine referring events.

For the present paper, we will organize examples of interactive reference assignment into three levels. These are intended to represent interesting points on a set of continua of related dimensions rather than three wholly discrete categories. That is, it would be possible to separate either speaker or addressee strategies into several dimensions and levels, but for the purposes of the present paper we will summarize analyses in terms of three general levels.

Level 1. Referring expressions are presented in a standard way and the addressee gives no sign of difficulty with reference assignment. In this case the interactional aspect is implicit in the lexical and the syntactic choices. Moreover, the speaker may take the reaction of her partner (i.e., appropriate responses) as tacitly confirming an adequate assignment of a referent to a particular linguistic expression (Clark 1996).

Level 2. In attempting to manage the accessibility of a referent, the speaker demonstrates some visible adjustment to potential difficulties by the addressee. This may be done by explicit questions, tag questions, questioning intonation on the expression itself, pauses, syntactic breaks and so on. The speaker may also use the structure of the utterance in a strategic way, even violating syntactic norms in order to present a relevant context that may facilitate the addressee’s access to a referent. The addressee may also anticipate potential problems and respond in such a way as to provide cues about his or her success in reference assignment.

Level 3. The addressee may play a direct role in reference assignment. First, the addressee may contribute directly to the formulation of a referring expression, either because the partner was able to anticipate the referring expression or because either of the partners perceived a problem in reference assignment. Second, they may consult directly on the reference assignment. Third, the partners may negotiate as to what an appropriate type or level of representation might be, and they may collaborate in determining whether that representation has been achieved.

6.1. Audience-sensitive choice of referring expressions (Level 1)

A number of previous writers have noted the importance of audience design in formulating or interpreting text. We go beyond previous discussions by claiming that such sensitivity demonstrates the inherently interactive nature of reference. That is, while it is more obvious in some cases than in others, all uses of referring expressions depend critically on assumptions about both (1) previously established communal and personal common ground (as discussed by Clark 1994, 1996) and (2) the current mental representations of text and context created by each partner.

6.1.1. Use of proper names or other referring expressions that exploit communal knowledge

The use of proper names without further elaboration assumes that the partner already has available some representation of the referent (Schiffrin 1994: 82). In the conversation between strangers in (1), A appears confident that his partner will be able to identify the town of Irvine and its relevant characteristic (commuting time) just from its proper name. Judging from the standard acknowledgment, that assumption was justified.

(1) A: I was gonna commute this summer
B: uh huh
A: from Irvine here
B: uh huh (14Ali)
However normal and smooth such an exchange might appear to be, it
depends on a large set of shared assumptions. Irvine is just one of many
cities within a 30-mile radius, and students would not expect each other to
be familiar with all of them; yet the speaker assumed, apparently correctly,
that the addressee would know Irvine. Clark (1996) has discussed the set of
assumptions required when partners refer to an object that is physically co-
present with the partners, e.g., a seashell one is holding. A much larger set
of assumptions is surely required when a speaker must assume both that the
addressee has previously obtained the relevant knowledge and that he will be
able to activate it merely from the use of a proper name. It is also important
to note that names are rarely unique — that is, there are in fact a large
number of potential referents for the name Irvine (a city, a university, a park,
a lake, an entertainment complex) — yet partners assume that the other has
made the appropriate reference assignment, based on the context.

6.1.2. Use of referring expressions that presume the current mental
representations created by the partner

Use of deictics, definite noun phrases, and anaphora also depend on assumptions about the partner’s representation of the linguistic and non-linguistic context. Such forms, which would be considered exceptions or even excluded from traditional models, are a central reference strategy in many rich narratives and exchanges.

Excerpt (2) occurs just following the opening greetings by a pair of friends, and it is clear from their conversation that this is their first interaction of the day. Thus all the context for interpreting the many underdetermined expressions below must come from their assumptions about their previously established common ground plus their beliefs about the representations currently being constructed.

(2) B: you know, I got my car
when I took Julie to school
and I realized that.. uhm,
the car was still making that funny noise,
where you poin- where you pointed at the hood..
[and you were not sure where it, was coming from]

A: [yeah= yeah sure]

B: and it was the muffler
... and I was afraid
... to drive all the way down here,
... because I thought,
... it would break down on the freeway.
... so I took it to the guy,
... that always fixes my car,
... and he told me,
... that it might be the waterpump
... and that it would be dangerous and
for me to drive down here. (241c)

Interpretation of the characters and events in the narrative above depends almost entirely on referring expressions that would be treated as exceptions by the traditional model of reference. It also demonstrates the variety of ways in which reference assignment depends on the addressee’s ability to access a relevant context. For example, the use of the proper name Julie depends on the partner’s ability to access long-term memory for the name of the speaker’s child, while the reference to that funny noise apparently depends on a recent episode the speaker believes her partner can access. Ambiguous referring expressions such as the hood, the muffler; and even the waterpump are interpretable only because the addressee will presumably activate her schema of a car at the beginning of the narrative and keep it active as a topic even though it is directly named only occasionally (cf. Fox 1996).

The six cases of it demonstrate several of the ways in which the reference assignment of pronouns can be successful despite woeful underdetermination from the text or physical context. On the basis of the text alone, traditional rules of reference assignment would interpret it as co-referential with the hood. However, from the context it is clear that it refers instead to an earlier noun phrase, that funny noise. Next, it would be expected to refer back to that funny noise, but instead it refers to the source of the noise, an abstraction that has not itself been introduced into the text but that must instead be inferred from the fact of the noise (Gundel 1996; Hellman 1996). It refers back to the car, which was introduced earlier but which was last mentioned explicitly 8 lines earlier, which would ordinarily mean it is no longer accessible (e.g., Givón 1983). According to standard rules of reference assignment, it would be ambiguous, as it might be expected to refer back to the most recent noun phrase the freeway or else, as
intended, to the subject of the previous sentence it, referring back also to the
car. It refers again to the inferred concept, source of the noise, which was
last mentioned 8 lines earlier. Finally, only it used cataphorically, is
unambiguously determined by the text.

Strangers, as well as friends, may also exploit their communal common
ground and make assumptions about their partner’s current mental represen-
tations in order to interpret underdetermined referring expressions. In the
segment below, partners have been discussing the rapidly approaching end
of the semester. A then began as below:

(3) A: tests everyday,
    cause,
you know,
the semester is ending right now
B: hu hu
A: like four weeks left,
or five weeks left to go,
B: like five,
or [six left]
    [I forgot]
A: I don’t know
I can’t take it no more (laughs)
... they’re going fast as hell,
cause they got to catch up to their schedule, (14A1i)

At no point in the conversation was there a direct or indirect antecedent of
‘they’. In fact, the first ‘they’ would reasonably refer back to the weeks that
have just been discussed. However, in the subsequent line, ‘they’ clearly
refers to humans and more specifically to the faculty. This causes one to
reinterpret the earlier ‘they’ as also referring to the faculty. While the faculty
have no direct or indirect referents in the text above, they clearly are agents
in the work of the semester and therefore are inferable (cf. Hellman 1996) in
a discussion of it. Such use of inferables clearly depends on the partner’s
assumptions about each other. Thus the interpretation of ‘they’ depends
partly on separate prior experiences each student can assume the other to
have concerning the script for an academic semester. In addition, we claim,
it’s successful use in a given utterance also depends on the fact that the partners
had already jointly established a context that activated a referent for ‘they’.

6.2. Anticipation of problems: setting up reference assignment and providing
informative acknowledgments (Level 2)

When partners are not confident that their common ground will produce easy
reference assignment, they may use any of a number of strategies to manage
and monitor it. Speakers may warn addressees explicitly or implicitly that a
reference assignment may be problematic. They may also provide contextual
cues that are likely to activate a previously established referent, or that will,
if necessary, create a new referent from the information activated. Addressee
also anticipate and deal with potential problems. For example, they
may respond in a way that goes beyond simple acknowledgment and that
provides some basis for the partner to draw inferences about the nature and
success of the representation produced. These strategies seem quite adaptive;
while none of these strategies will guarantee success, they may greatly
increase the probability and speed of reference assignment.

Thus either partner may anticipate problems and may build into his or
her utterances some means for joint management of reference assignment. In
some cases, the speaker overtly expresses concern about the partner’s
background knowledge:

(4) B: we went to an island umh.. Corfu,
    <SV I don’t know if you ever heard of it SV>
    and went there, (17A4t)

However, in most cases the speaker’s concern must be inferred from various
cues. The following excerpt demonstrates several features we believe are
associated with concern about the best way to get the partner to access or
represent the referent. The speaker has generally been quite fluent in
describing her travels. Then she begins to describe regular travel to visit her
family and suddenly produces several disfluencies.

(5) B: and then we go to to Europe
to Austria,
    .. to=.. my mum has a condo (H)
on a on a lake called Wortherssee,
    .. which is= umh in the South of Austria,
    on the border of Yugoslavia and Italy. (242t)
She repeats a word, repairs a phrase, lengthens words, pauses, interposes an explanatory sentence, repeats a phrase, etc. Ordinarily, disfluencies are ascribed to speaker uncertainty about information or inability to retrieve lexical items (Garman 1990: 119–120). However, it seems extremely unlikely in this case that the speaker is either uncertain about the information or has retrieval difficulty. Rather, we believe, she may be uncertain as to how to get her partner to access or create an appropriate representation. These devices may also serve a set of important functions by warning an addressee that a problematic reference is forthcoming. With such warning, the addressee may search more extensively than usual, and she is given more time to do so. Also, the warning may serve to encourage feedback without loss of face if the search is unsuccessful.

Several further cues seem to support this interpretation. One is the speaker’s use of the expression ‘called’, which appears to signal the assumption that her partner would not already be familiar with the lake. This is followed up by a description of the lake’s location, which serves both as a clue that she does not expect the partner to already know it and also as a means of providing the context needed to make an appropriate representation.

Also, in (5) the speaker uses a raised intonation at the end of the elaboration my mom has a condo (H). Sacks and Schegloff (1979) interpret such intonation as a try marker, which is used when a speaker is seeking confirmation of successful processing by an addressee. In a number of similar cases, speakers used stretched (I went to Iguazu Falls where they filmed the movie ‘The Mission?’) intonation. These provide further examples of Level 2 strategies, in that they indicate some uncertainty about the adequacy of the referring expression and also provide an opportunity for the addressee to provide feedback.

Both (4) and (5) also demonstrate how speakers may provide contexts to prime a referent when the speaker suspects that the referent is not readily accessible to the addressee. An especially interesting feature of both excerpts is the syntactically unorthodox ordering of the two referring expressions, an island uhm Corfu, and to Europe, to Austria. A number of references to location followed the same pattern, with the more general name being provided first.

(6)  A: and for a weekend we went.. uhm=.
up to=.. uh=.. Canada Victoria Island and,

(7)  B: last year I went to Arizona.
Yuma. (302t)

A similar strategy was used when identifying small towns located near larger and more familiar ones; that is, the larger town was named first. (It is interesting to note that, in the example below, ‘down from’ cannot be taken literally, as San Diego is south of Carlsbad, and both are south of Long Beach. Nonetheless, A appears to have no difficulty in processing this information, responding with a conventional acknowledgment.)

(8)  B: but I’m from. down from San Diego, n Carlsbad
A: oh! (17Al1)

The same strategy was used to describe locations not involving proper names or conventional address formats. In the example below, the speaker wants to explain how she happens to have attended a workshop on self-defense. She begins with a vague description I stay on campus. While this expression might reasonably imply that the speaker lives on campus, she follows up with the more specific term ‘residence halls’.

(9) yeah.. cos I stay on... campus..
I stay in the.. residence halls. (303k)

We must admit that, originally, we assumed that utterances like the above were misstatements of syntactically orthodox versions such as “I went to Yuma, Arizona”. However, as we found several such examples (not all are listed above), we saw this as a phenomenon parallel to that described by Fox, Hayashi and Jaspersion (1996) in their discussion of interaction and syntax. They presented examples in which speakers juxtaposed two different structures within a turn. While these structures would ordinarily be seen simply as errors, Fox et al. proposed that in such cases speakers may use syntactic repair to accomplish communicative goals that would be considerably less effective and/or efficient using conventional structures. Similarly, in our examples, we believe the unorthodox ordering of concepts is not a performance error but rather is strategic for reference assignment, even though it violates conventional syntax. In all cases, the more familiar context is given first, then the more specific referring expression. This suggests that the speaker may be tactfully taking into account that a listener will ordinarily
find it easier to access the less-well-known location, Victoria Island, if the more general and familiar context, Canada, is given first.

Thus the disfluencies and the non-standard ordering of location names may result from related processes involved in attempting to assist the addressee in gaining access to the referent. It is as though speakers are juggling two types of constraints. Some constraints are syntactic; others deal with audience design — specifically, with the partner’s potential access to relevant referents. When an unelaborated noun phrase or proper name is an adequate referring expression for the particular addressee, the speaker may be able to produce utterances that are both syntactically correct and successful. However, when the referring expression requires elaboration or specification, and especially when the speaker is not sure what referring expression will be adequate, the speaker may give greater priority to making concepts accessible rather than to using standard syntax.

Another means of Level 2 interaction comes from the addressee’s reaction. The addressee may also judge a reference assignment to be potentially problematic and may give feedback that goes beyond standard acknowledgment and provides evidence as to the success of the reference assignment. In example (10), B first indicates uncertainty as to whether he has understood a reference. Then, following clarification, he provides tacit evidence of more than the expected level of comprehension.

(10) A: ya, I’m a sophomore transfer,
    B: transfer?
    A: from CAL POLY
    B: oh,
    I’ve friends in Pomona (14A1i)

The first attempt by A to describe his status appeared to be problematic: the term ‘transfer’ may have been unexpected, and B repeated it, apparently for confirmation (see Sorjonen 1996). Speaker A evidently felt the term itself was adequately clear and so went on to add a specification, “from CAL POLY,” referring to the polytechnic universities in the system. This information is ambiguous, as there are two such universities; and further it is not yet clear that B understands what he means by ‘transfer’. But B immediately implies a successful interpretation of the term by responding, “oh, I’ve friends in Pomona”, referring to the polytechnic university that is located closest to Long Beach. Thus B’s reply went well beyond the expected acknowledgment and indicated a fairly elaborate representation of the speaker’s previous utterance.

In other cases, the addressee’s response indicates that the reference was somehow problematic. In the case below, the speaker introduces a new referent in the standard way, a daughter. Yet, B fails to give the standard acknowledgment and instead appears to indicate disbelief.

(11) A: I have a daughter.
    B: do you? (12A3i)

The addressee certainly is not intending to challenge the speaker’s information; rather she is probably indicating that she is finding the information unexpected and therefore hard to integrate immediately with her current representation of the partner. The response is not meant to be taken literally, as a question, but rather as a signal about the difficulty in processing the information.

In sum, we believe partners continually provide each other a number of suggestive cues about either their own representation or their partner’s likely representations. In addition, we believe that when speakers anticipate problems, they may use a variety of strategies to warn their partners and/or to facilitate the ready access of their partners to the relevant information. A strategy of special interest is when speakers provide a context that will be itself accessible and will thus facilitate the processing of a less accessible referent. (While our examples have focused on reference to locations, we have also found the same strategies used for referring to other entities, both concrete and abstract.) In addition, we found responses from addressees that not only acknowledge information but indicate how readily it has been processed.

6.3. Active participation of both partners (Level 3)

The role of interaction in reference assignment is especially clear when both partners collaborate directly. Our data provide further support for analyses presented by previous writers, as partners frequently collaborate to co-construct a referring expression or consult directly on a reference assignment. In addition, we found evidence for another important role of interaction, that is, negotiating a good-enough reference. A critical assumption behind our discussion is the belief that all reference assignment is a matter of achieving
a "good-enough" representation rather than a perfect match between the representation held by the speaker and that constructed from the referring expression by the addressee.

6.3.1. Contribution to referring expression
Clark and his associates have previously described several strategies by which addressees contribute to a referring expression (see discussion above). Like Clark, we found cases in which addressees anticipated the completion of a referring expression (A: "Pava= B: "Pavarotti", or in which the speaker directly appealed for help (see (17) below).

6.3.2. Consulting on reference assignment
In our conversations, as in the tangram task, partners used a variety of means to consult with each other concerning a reference assignment. However, we believe that in natural conversations an interesting new element is involved, in that partners must consult as to whether contextual constraints are being applied appropriately. Earlier we have described examples in which the context provided by the speaker appeared to be designed to facilitate access to the target referent. Sometimes, however, the context may be misleading, and as a result the partners may need to clarify the reference assignment.

In example (12) below, the partners have previously mentioned travel to, in order, Mexico, Arizona, Las Vegas, Chicago, St. Louis, Kansas, and Arkansas. One or the other has indicated, in order, a desire to go to Hawaii, Miami, Walt Disney World, and Jamaica. Then A mentions that she was in New York this year, and B says she was also. They briefly compare New York to Los Angeles, and the following interaction ensues:

(12) B: yeah
   ... I wanna go to Paris.. (laughs)
A: ... of France? (15B61)

The response by A above, when read out of context, seems so unexpected as to be humorous. Ordinarily, it would be safe to assume that Paris, France, is the most accessible referent of 'Paris'. However, there are at least three cities in the United States named Paris, and all of the previous referents on the topic of travel have been in the region of North America. The context has apparently created an implied constraint, that the speaker will talk about American cities, and thus A feels the need to confirm a reference assignment that violates this constraint. Such an example provides especially strong evidence for the impact of context on referent accessibility in everyday conversations. It also demonstrates one situation that requires partners to consult directly.

6.3.3. Negotiating a good-enough representation
An important characteristic of natural conversations is that partners must constantly negotiate as to what type of representation is good enough for the purposes of the conversation, as well as whether that has been achieved. Such negotiation appears to play no role in the standard semantic model. In that model, reference appears to consist of a discrete event in which speakers and listeners play complementary roles. Speakers are responsible for forming referring expressions that identify a unique referent, and listeners are responsible for interpreting the referring expression so as to do so. Such models give the impression that the speaker's responsibility ends when his or her utterance is well-formed and complete. Even in psycholinguistic models that stress the importance of feedback from the listener (Clark 1996), the role of the feedback is to let the speaker know whether the expression was adequate for making an identification, and the speaker's responsibility appears to end when the addressee indicates acceptance of a referring expression. Neither approach discusses the possibility that, as a result of the interaction, the speaker might have to revise his or her expectations concerning the nature of the reference assignment being produced or that the addressee might have to revise an assignment that he or she had considered adequate. Previous models also fail to discuss the many ways in which the requirements of the representation might change from point to point in the conversation, demanding either more or less differentiated representations depending on the current goals of either partner.

As discussed above, we believe that psycholinguists have neglected this role because it is not relevant in the communicative tasks they have studied, in which the task itself defines what type representation is needed and when. However, in our conversations, partners had to deal with a number of issues connected with such negotiation. Frequently, an addressee would appear to be satisfied with his or her level of comprehension, but subsequently the speaker would discover that they were wrong in their belief about the representation they had produced. Partners then were forced to negotiate explicitly in order to achieve a better representation. One common outcome
of this negotiation appeared to be a compromise between the speaker's original intention and the addressee's achievement. In some cases, partners had to repair representations that appeared at first to be good enough but were subsequently discovered to be flawed. Other times, a representation that was good enough for the purposes at one point in the conversations turned out not to be good enough for different purposes later on, requiring repair at that point. On the other hand, partners sometimes tacitly agreed that a representation that was incomplete by normal standards was nonetheless satisfactory for the conversational goals. Our examples suggest that partners may reach a compromise as to what representation is good enough, as they balance competing goals of the informational and social demands of the conversation.

First we will analyze a case in which a reference assignment that the addressee apparently considered successful at one point turned out to be flawed. In excerpt (14) below, partners had to collaborate over several turns in order to identify and repair a mis-representation of where A grew up. In the fast-moving early phase of the conversation example (extract 13) A had provided the target information that he grew up in New Mexico.

(13)  A: I lived in New Mexico all my life so, (14A1i)

B gave a standard acknowledgment, and at that point there seemed to be no reason for concern about how well the information had been represented. When A's hometown became relevant again, he provided the information again but rapidly, as may be typical of reminders. Again, there appeared to be no reason for concern. However, as the conversation proceeds, A discovers a serious flaw in B's representation. Shortly before the extract given in (14), B has indicated he loves Chicago and A, a loyal Californian, asks, well what about in winter?

(14)  B: winter is yeah
A: I don't know I don't know, uh, it's like my hometown, n New Mexico
B: yeah
A: all snow
snow during the winter, but I love it.
B: Mexico is nice huh?

A: yeah,
New Mexico.
B: New Mexico?
A: yeah, it's a state,
not.
B: oh yeah I know I know I recognize.
I got confused yeah.
A: yeah (H),
it's it's pretty nice. (14A2i)

B has either misheard A or does not have a very strong differentiation between Mexico and New Mexico. (B has only been in the country for two years, so Mexico and New Mexico may be equivalent to him for most purposes.) At any rate, B seems content with his vague representation, and there is no problem until he attempts to elaborate in a general way on A's comments and exposes his misunderstanding. A then makes it clear that this representation is NOT good enough for his purposes, and the partners then collaborate over several turns to ensure a better one. A, apparently considering two possible sources of B's confusion, attempts to correct either misconception, by repeating the name more clearly and also specifying it's a state. A's behavior is evidence of his monitoring of B's representation, his sense of responsibility that it be good enough to serve his purposes, and his willingness to use various strategies as needed to repair a misrepresentation. B's behavior suggests that addressees may calibrate the precision of their representations to the conversational goals as they perceive them. Initially, he saw no reason to ensure that he had a precise understanding of where A is from. But his evident embarrassment, when his misunderstanding is revealed, suggests that he takes seriously the task of creating a representation that his partner will consider satisfactory. Both apparently take seriously the challenge of ensuring that an appropriate representation has been made, and it takes the two working together to determine what that representation should be and whether it has been achieved.

Sometimes, even an unflawed representation that seems good enough at one point in a conversation turns out to be insufficient for the purposes of another part of it. In example (8) above, A seems to believe she has a fully adequate representation of B's hometown. Her response, Oh, is generally assumed to indicate the successful uptake of new information (Heritage 1984).
However, A apparently doubts whether B has the representation of Bora Bora needed to interpret A's forthcoming claim that it is his dream travel destination. In this case, A's only cue seems to be that B has responded in a routine way when A apparently expected more enthusiasm. Speaker A then embarks on a series of strategies to ascertain B's representation and to ensure a better one. First he asks directly whether B knows where Bora Bora is. Second, he describes briefly the location of Bora Bora, near Tahiti, but this does not provoke the expected reaction either. In fact, the location is not really the point but was probably intended to provide a context to help B access whatever prior knowledge of Bora Bora he might have. When this strategy does not work, A next confronts his partner's ignorance of the island directly with never heard of it?. When B confirms this suspicion, A gives a brief description of its appeal, it's a good place, and, still frustrated with his inability to provoke access to it, gives a directive for the partner to look it up some day. After getting acknowledgment of that advice, he gives a further brief description of its appeal, really beautiful, before moving on to a related subtopic. While the above example may be unusual in terms of the variety of strategies used, we think it demonstrates a typical concern. Obviously A does not require that B have a representation that matches his own, nor does he require a representation that would, say, qualify as an answer on a geography exam. But he does insist on confirming explicitly that B at least understands those features relevant to the interpretation of his utterance. While in this case the original speaker takes most of the initiative, it is only through aggressive probing that he determines that the addressee's representation is not good enough for his purposes. Also, it is through interaction that the speaker tries to guide B's creation of a good-enough representation.

Especially dramatic evidence for the role of negotiation is found when partners agree that a representation is good enough even though it would appear by formal criteria to be incomplete. Sometimes speakers seemed confident they had identified the same referent, either before the name was retrieved or even when it was not. In example (17), two strangers discussing movies have mentioned several actors using only proper names. Speaker B then introduces another actor but cannot recall his name.

(17) B: Wesley Snipes in erm ... who's that other guy?
its... the movie's called Money Train.
who's that guy?
he play- yeah he played in a movie with erm
Wesley Snipes and him did another movie 
erm... god 
with Rosie Perez. 
what was that movie? 
.. White Men Can’t Jump!

A:  o=!)! 
[yeah yeah yeah yeah.]

B:  [remember that guy?] 
I forget his name!
[that one] white guy.

A:  [me too]

B:  they... they’re having a movie out. 
Movie Tra... Money Train.

A:  Money Train.

B:  yeah.

it looked cool. (305m)

The speaker presents a series of cues she hopes will constitute an effective context to activate a representation of the referent: the movie title, reference to the co-star, reference to a second movie, name of the actress in the second movie, and the title of the second movie. In this case, the clues are insufficient for either partner to access the desired name. But, more important, the clues DO apparently enable A to access some representation of the target. Not only does she declare, as a standard sign of recognition (Heritage 1984), o=!)! yeah yeah yeah yeah, she also responds me too when B declares again I forget his name. The anaphorical reference to the actor, his name, implies that A has also accessed some representation of him even though the name is still missing. Partner A also accepts B’s subsequent referring expression they, even though the second actor was never named. Clearly, then, both A and B believe that A has created a representation of the actor that is good enough for present purposes; while the partners might have been able to retrieve the name eventually, it would not have added any information worth processing. Note, however, that originally B was determined to retrieve the name, but as A gave evidence she felt she knew who B was referring to, B apparently decided that the name itself was not needed. Here, as in earlier examples, the original speaker appeared to compromise her expectations for the representation; in this case, she tacitly agreed that the achieved one was good enough.

Thus, we believe there are a variety of ways in which partners negotiate as to what representation is needed and whether it has been achieved. Such a determination is a critical part of a natural conversation. As there is no formal or externally-defined way of determining when an appropriate assignment has been made, the partners must continually judge and monitor that as a team. Speakers are not content to let the addressee alone be the judge of whether he or she has an adequate representation; rather, they often probe, repair, and reach compromises with their original expectations. Further, such negotiations are an on-going process, which does not end when a representation seems good enough at one point in a conversation. Partners may revisit and readjust their representations.

7. Conclusions

In this paper we have tried to argue for an interactive model of reference assignment, which draws both from linguistic and from psychological models. Our model depends crucially on the analysis of actual conversational data. We have begun by identifying different levels of interaction. On the first level, reference assignment is unproblematic and the interactive aspect is only implicit. As long as there are no indications to the contrary, the speaker assumes that the addressee could process all referring expressions on the basis of their common ground and therefore was able to establish good enough representations of the intended referents, even when they were underdetermined syntactically and semantically. On the second level, the speaker perceives some potential difficulty and uses a variety of means such as try markers or indeed explicit questions to give the addressee a chance for intervention in case of insufficiently grounded referring expressions. The speaker may also structure an utterance or set of utterances in such a way as to provide a context that will facilitate access to the referent, even at the risk of violating syntactic norms. Or the addressee may anticipate problems and may provide acknowledgments that are informative concerning the representation formed. On the third level the interactants are forced to negotiate explicitly in order to arrive at a mutually satisfactory representation of a referent. Thus there is a scale from the implicit interaction on level one to the obvious interaction on the third level.
However, in all cases the accessibility and identifiability of referents depends on the interaction between the speaker and the addressee. It is not merely a matter of choosing an appropriate referring expression, which then would suffice for any audience. Referring expressions have to be chosen with a particular audience in mind and are dependent on the common ground they have established.

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