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## 5

## Mutual Knowledge and Communicative Effectiveness

Robert M. Krauss  
Susan R. Fussell  
Columbia University

### Abstract

For people to communicate effectively, they must solve the mutual knowledge problem. That is, they must develop some idea of what their communication partners know and don't know in order to formulate what they have to say to them. Speakers come to conclusions about their partners' states of knowledge through a number of mechanisms—by listening to what they themselves have just said, by making inferences about the partners' state of knowledge from their category membership, or by relying on direct and backchannel feedback from their partners. This chapter describes experimental research illustrating these proposition and draws implications from this research for communication technology to support cooperative work.

It is hardly more than a platitude to observe that all cooperative work is mediated by some form of communication, but, platitude or not, there are few situations in which people can work cooperatively without a means of coordinating their efforts. Coordination of effort requires that information be exchanged among the cooperating individuals, and the exchange or transfer of information makes up a large part of what we mean by communication. The explosion in the development of communications technology that has occurred over the last quarter century or so has raised questions about (a) the kinds of information that must be communicated in order that different sorts of work can be accomplished, and (b) the communication modalities that can more or less efficiently transmit these different sorts of information.



This chapter reviews some research on the social psychology of communication, and speculates about its relevance for the study of technology and cooperative work. The focus of the review is what we call the *mutual knowledge problem*. The mutual knowledge problem derives from the assumption that to be understood, speakers must formulate their contributions with an awareness of what their addressee does and does not know. Effective communication, in Roger Brown's (1965) felicitous phrase, "requires that the point of view of the auditor be realistically imagined" (p. 342). Thus, communicating parties are faced continuously with the task of constructing their common cognitive environment—that is, ascertaining and representing the information that they and the other participants can (and will) assume to be known to all.

In this chapter, we review research that examines how communicators deal with some of the consequences of the mutual knowledge problem. Where possible, we try to examine converging lines of evidence, but our review of the literature is selective and speculative. We first attempt to formulate the mutual knowledge problem in a coherent way and set it in a conceptual framework. We then describe the relevant research findings. Finally, we speculate on the ways that various communication technologies might interact with the mutual knowledge problem.

### Communication and Mutual Knowledge

For the purposes of this discussion, we regard communication as a process by which knowledge that resides in one or more people comes to be represented in one or more others. Certainly the transfer of knowledge is not the only thing that happens in communication, and for certain purposes it may not be the most useful way of thinking about the process. Below we refer briefly to some other dimensions of communication that may be important for cooperative work. Underlying the knowledge transfer view of communication is the assumption that any communicative act rests on a base of mutual knowledge or, as it is referred to by Clark and his colleagues, "common ground" (Clark & Carlson, 1982; Clark & Marshall, 1981).<sup>1</sup> The two terms will be used interchangeably. Mutual knowledge is knowledge that the communicating parties both share and know they share.<sup>2</sup> It is assumed that

<sup>1</sup>We are following the usage of Ekman and Friesen (1975) and distinguishing between acts that are *informative* (i.e., that serve as a basis for some inference about the actor) and those that are *communicative* (i.e., that are intended by the actor to convey information). The distinction gets somewhat fuzzy around the edges, but something like it is necessary when one talks of the role of mutual knowledge in communication. Informative acts do not presume mutual knowledge or, indeed, knowledge of any sort.

<sup>2</sup>As Clark and his colleagues have made clear, the condition of mutual knowledge is considerably more complex than this, at least in its abstract form. Logically, in order for X (some item

we can only tell someone about something he or she does not know by making use of something he or she does know. In the most trivial sense this is obviously true. For the purpose of writing this chapter, we have assumed that the reader either understands English or will have it translated, and that the reader is aware that we have made this assumption. Hence, the body of knowledge that constitutes "the ability to understand English" can be assumed to be mutually known.

But beyond this triviality, we have made a great many other assumptions about what the reader does and does not know, and to a substantial degree our ability to communicate effectively is dependent on the accuracy of these assumptions. For example, the next paragraphs describe referential communication tasks, a technique used in many social psychological studies of communication. We are aware that some of our readers will, but many will not, be familiar with such tasks. The next paragraph, then, reflects our assumption about the distribution of a certain kind of knowledge in the likely readers of this chapter, and represents an effort to ensure that the existence of the common ground on which the subsequent discussion will depend. Among the questions to be addressed are how this accounting is accomplished—how people go about determining, correctly or incorrectly, what is mutually known between them and their conversational partners—and the consequences this has for communication.

### Referential Communication Tasks

Now for the adumbrated paragraphs. A great many social psychological studies of communication have employed what has come to be called a "referential communication task," and because the use of such procedures is so pervasive it is appropriate to say a few words about their strengths and limitations. A referential communication task presents communicators with a fairly elementary problem. It requires that one of them formulate a message about something (typically a visual stimulus of some sort) that will enable another person to select that thing from among a set of similar things. The thing that is described or characterized in the message is termed the *referent* and the things from which the referent is distinguished are called the *nonreferents* or the *nonreferent array*. The particular description or characterization of the referent contained in the message is often called the

of information) to be "mutually known" by persons A and B, it is necessary but not sufficient that A and B know X. A must also know: that B knows X, that B knows that A knows X, that B knows that A knows that B knows that A knows X, and so forth; and similarly for B. As Clark (1985) pointed out, the form of the problem is an infinite regress and therefore has no solution. Precisely how people deal with this formally unsolvable problem is a matter of some interest. Sperber and Wilson (1986) provided a thoughtful discussion of whether this is in fact a real problem for communicators. We briefly address this issue later.



*referring expression*. For example, in such a task one person (the "speaker"<sup>3</sup>) might be asked to describe a picture of a face to another person (the "listener") who, having heard the description, would attempt to select that picture from a set of similar pictures.

Reference is a fundamental function of language, and in large part is the ability of language to represent referentially the objects, events, and relations of experience that makes it so powerful a tool in communication. Referential communication tasks attempt to simulate, under controlled circumstances, the process of reference that occurs in natural settings. A very large number of experiments, investigating a wide variety of substantive issues, have been run using variants of this procedure and it would serve no useful purpose to try to review them here, but there are some noteworthy aspects of the procedure.

First, the task permits the investigator to index objectively and quantitatively the adequacy of communication—that is, how well the speaker's communicative intention has been implemented or, if you will, the effectiveness of the communication that has taken place. It is the speaker's goal (by the rules of the experiment) to formulate a referring expression that will allow the listener(s) to distinguish the referent from the nonreferent; the listener's success in doing this is a reasonable way to assess the effectiveness of the communication that has taken place.<sup>4</sup> This is no small thing. When we ask whether people do a better job of communicating face-to-face than over a telephone, or whether having a graphics capability makes remote conferencing more efficient, we are implicitly asking about the effectiveness of communication. The problem is how communicative effectiveness should be assessed. For example, it seems intuitively reasonable to ask someone a question like "How effectively did A communicate his ideas to you?" and such a question, asked under the appropriate circumstances, will elicit a reply, but it's not completely clear how the responses should be interpreted. In general, the literature seems to indicate that the best predictor of how effective or satisfactory communicative interaction will be judged is how much the person judging got to talk. People seem to feel that the most satisfactory or effective interactions are ones in which they talked a lot. However, most of us have found that the correlation between how much people talk and how effectively they communicate is closer to zero than to

<sup>3</sup>To facilitate communication, we refer to the individuals who initiate message as "speakers" and "encoders" and to message recipients as "listeners," "hearers," "addressees," and "decoders" regardless of the particular mode of communication in the experiment we are discussing. We also use the term "overhearer" to refer to someone who receives a message intended for someone else, even when those messages are written and delayed in time.

<sup>4</sup>This, of course, assumes that the participants are cooperating with the experimenter, that they understand what they are supposed to do, and so forth. In normal circumstances, these are not unreasonable assumptions.

unity. A referential communication task is not the only way to assess objectively the adequacy of communication, but it is at least one way and it is a way that has been used a lot.<sup>5</sup>

In addition, a referential communication task has the advantage that it constrains what the participants talk about. Unless the participants stray from their assignment, the topical domain is defined by the task, and this allows the investigator to do two things. First, it becomes possible to make comparisons among different communicators without being concerned that observed differences in performance are accounted for simply by differences in what they are talking about. Second, it permits the investigator to vary properties of the referent array in a systematic way, and thus assess effects of "topic" (using the term in this loose sense). We discuss some experiments in which this is done. Finally, the messages generated in referential communication tasks can be removed from their original context and transmitted to parties other than those for whom they were intended, allowing the investigator to assess, for example, the extent to which messages are individuated for their intended recipients, and how such individuation affects their ability to be understood by others.

However, along with these advantages go some significant drawbacks. These grow out of the fact that such tasks are, at best, a model of one kind of communication situation, and results obtained from their use should be generalized to other kinds of situations only with great caution. By their nature, referential communication tasks focus the participants narrowly on the transmission of specific kinds of information, and this heavily constrains what they can do. Typically the participants' speech lacks the texture of conversation, and at times their exchanges take on the mechanical, depersonalized quality of interactions with a directory assistance operator. The interaction of experimental subjects is socially situated in a curious institution called "the psychological experiment." Like all social situations, this one has its own rules, and the rules may not be the same as the ones that apply in other situations. A Martian observing the behavior of subjects in a referential communication task, and believing it to be typical of human communicative exchanges, would probably conclude that human communication is a one-sided, mechanical process, lacking affect, variety, playfulness, or conflict. Indeed, some of the very qualities that make linguistic communication the versatile and effective tool that it is (i.e., the subtle, flexible and creative ways in which language can be employed) are effectively disabled by the nature of the task.

Although not all that we know about the relation of mutual knowledge to communicative effectiveness is based on research using referential commu-

<sup>5</sup>We discuss some experiments that use other techniques to determine the effectiveness of communication.



nication tasks, a good deal of it is, and when thinking about the results of these studies, it probably is a good idea to keep clearly in mind the limitations of this method.

### Mechanisms in the Establishment of Mutual Knowledge

We argue that there are three interrelated sets of mechanisms that communicators employ to establish the condition of mutual knowledge in their interactions.<sup>6</sup>

#### Direct Knowledge

The first set of mechanisms depends on personal knowledge of other individuals, more specifically knowledge of what particular other people know. So if you told a friend that you had seen the movie *Fatal Attraction* and were scared out of your wits by it, this information could be considered to be common ground between you and your friend. Of course, it is not necessary to say something in order for it to be mutually known. If you and your friend were physically copresent at some event (and mutually know this), you could assume that the salient aspects of that event were also part of your common ground.<sup>7</sup>

Direct knowledge, especially of habitual behaviors, often makes it possible for the speaker to extrapolate from what is directly known to draw inferences about what has a high probability of being known. Given that you and a colleague mutually know that you both read the *Wall Street Journal* every morning, and the fact that a story on the XYZ company (in which you both have a special interest) was prominently featured on the front page of the *Journal* that morning, the story's contents can be assumed to be mutually known without direct knowledge. Similarly, a dedicated Yankee fan can begin a conversation with another fan by saying "What are we going to do about George?" secure in the knowledge that his partner will be able to locate the particular incident (e.g., firing the manager, publicly criticizing a player, etc.) that constitutes the appropriate interpretive context for his remark about the team's owner.

<sup>6</sup>This account is based largely on the theoretical argument of Clark and Marshall (1981), although we have partitioned the variables somewhat differently.

<sup>7</sup>Two people are mutually copresent if they mutually know that they both were there—that is, each both knows that the other was there and knows that the other knows that, and so forth. Obviously not all aspects of an event at which two people were copresent can reasonably be assumed to be mutually known, only those that are above some threshold of saliency.

### Category Membership

A second set of mechanisms derives from the fact that individuals can often be assigned to social categories, and such category membership often predicts individual knowledge. So, for example, it is reasonable to assume that a person belonging to the occupational category "New York City taxi driver" knows that with a few exceptions, the even-numbered streets in Manhattan are one-way eastbound and the odd-numbered streets are one-way westbound. Similarly, it is reasonable to assume that a person belonging to the category "average, normal American teenager" knows that "Dead Kennedys" refers not to a former president and attorney-general who were brothers, but to a now-defunct punk rock group. Of course, category membership is not a perfect predictor of knowledge. Doubtless there are some teenagers who have no idea who the "Dead Kennedys" are, and with increasing frequency one encounters New York taxi drivers whose knowledge of local geography barely goes beyond "the Bronx is up and the Battery's down." Nevertheless, group or category membership is often a very good indicator of what, at a minimum, an individual can be expected to know.

### Interactional Dynamics

A third set of mechanisms for ascertaining common ground grows out of the dynamics of the interaction process itself. One way of characterizing this is in terms of what Clark and Marshall (1981) called the "linguistic copresence heuristic." In the course of a conversation, anything said at time  $T$  can be assumed to be mutually known at time  $T + 1$ .<sup>8</sup> In this way, individual knowledge is transformed incrementally into mutual knowledge. But the linguistic copresence heuristic, applied in so bald and mechanistic a fashion, fails to capture the flexibility and richness of human communication that accounts for much of its effectiveness. It portrays the process as one in which participants alternate in producing discrete messages, interacting in much the same way as parties using e-mail. Conversation (and similar interactive forms) permits communicators to formulate messages that are tightly linked to the immediate knowledge and perspectives of the individual participants, because it affords the participants moment-to-moment information on each others' understanding.

One of the devices by which this is accomplished is what Yngve (1970) and others called messages transmitted in the back channel. The brief vo-

<sup>8</sup>As with the other heuristics described by Clark, some measure of qualification is in order. Surely it is not the case that one expects his conversational partner to remember everything that was said in the course of a long conversation, but just how to characterize in a formal way what is and is not reasonable to expect another to remember is not a simple job.



calizations, head nods and shakes, facial expressions, and so forth, produced by the participant who at that moment is nominally in the role of listener, are a rich source of information about the state of the common ground. Such information permits the formulation of messages that are extremely efficient because they are based on a reasonably precise assessment of the hearer's current knowledge and understanding. There is a fair amount of research that goes to this point, some of which is reviewed later.

### LISTENER EFFECTS ON MESSAGE FORMULATION

What evidence is there to indicate that communicators do indeed take the informational status of a listener into account when they formulate messages? We have done several studies that speak to this point.

#### Self Versus Others

Perhaps the simplest sort of distinction in informational status that one can make is between oneself and others. Although it seems obvious that not everything we know is familiar to others, the speech of young children does not consistently take this into account (Glucksberg, Krauss, & Weisberg, 1966; Krauss & Glucksberg, 1969). An experiment by Krauss, Vivekanathan, and Weinheimer (1968) investigated whether people formulated different messages depending on whether they themselves or another person were the intended recipient. Underlying the experiment were two assumptions: First, because not everything one knows can be assumed to be mutually known by some other person, messages formulated for the self should be different from those formulated for others. Second, the smaller amount of common ground one shares with another person should be reflected in the effectiveness of communication. In the experiment, undergraduate women were asked to name each of a set of 24 colors under one of two conditions. Half of our subjects were asked to give each color a name that would enable the subject herself at some later time to select the named color from a large array of colors. We called this the nonsocial naming condition. The remainder of our subjects were instructed to give each color a name that would enable some other female undergraduate to select the named color. We called this the social naming condition. Then, about 2 weeks later, all subjects returned to the laboratory, and tried to match each of a large number of color names to the color that had elicited it. One-third of the names were those the subject had given herself 2 weeks earlier; we call these *own names*. Another third were *social names*—that is, those of another subject from the social naming condition. The remaining third were

*nonsocial names*—those of another subject from the nonsocial naming condition.

The results of the experiment are shown as the bars on the left side of Fig. 5.1. We take as our criterion of communication effectiveness the accuracy with which a message permits a receiver to select the designated color. It becomes evident that the most effective messages were those whose source was the subject herself. However, among those messages whose source was another person, those intended for another person (i.e., produced in the social naming condition) communicated more effectively than those intended for the source herself (i.e., produced in the nonsocial naming condition). In formulating messages for themselves, our subjects were able to exploit the extensive common ground available, to employ arcane or idiosyncratic knowledge that one could not reasonably assume another person would have available. For example, they likened the stimulus colors to the color of objects familiar to them—the paint in a particular room, or an automobile seatcover. However, subjects whose task it was to formulate messages for others could not employ this strategy, and were forced to rely on the standard English color lexicon or to refer to the colors of commonly known objects.

Despite the fact that the experiment yielded informative results, it seems clear in retrospect that colors are not the best kind of stimulus material to use in this sort of experiment. As in many languages, English has a rich and highly differentiated lexicon of color terms. By combining terms and using standard

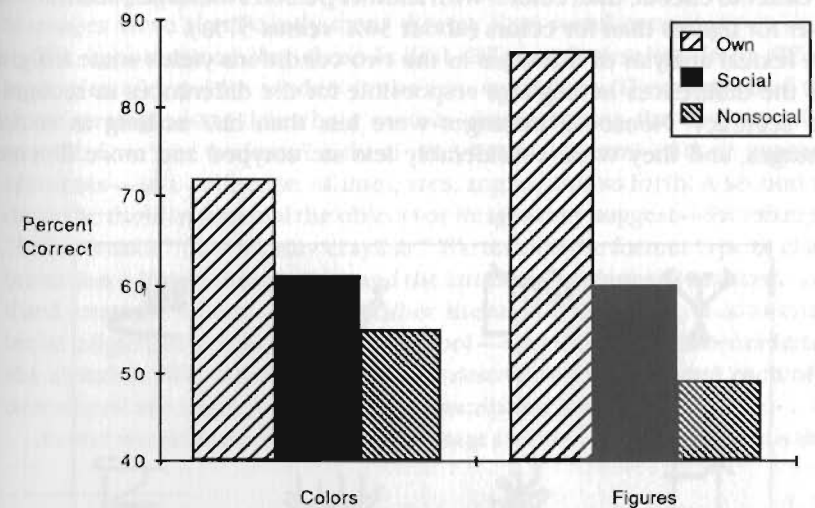


FIG. 5.1. Recognition accuracy based on Own, Social, and Nonsocial messages. (Data from Krauss, Vivekanathan & Weinheimer, 1968; Fussell & Krauss, 1989.)



modifiers like *light*, *dark*, *bright*, and so forth a communicator has available a broad range of conventional referring expressions. Much of this conventional lexicon is in common ground. Hence, the need to invent expressions is small, and we would expect this to minimize differences in recognition accuracy.

Recently, we replicated this experiment (Fussell & Krauss, 1989) using as stimuli drawings of nonsense figures; some examples are shown in Fig. 5.2. Unlike colors, these stimuli have no well-established conventionalized names and, for this reason, require that communicators closely monitor the common ground they share with the message recipient. This has important consequences for both the form of messages and the adequacy of communication. We used the same procedure as in the previous study, with only two changes: we substituted a set of 30 nonsense figures for the colors, and we used both males and females as subjects.

As the bars on the right side of Fig. 5.1 indicate, we reproduced the overall results of the previous experiment: Communication is most accurate when sender and receiver are the same person. When the source is someone else, communication is significantly more accurate if the message was originally intended for another person (the social condition) rather than the sender him- or herself (the nonsocial condition). But as we anticipated, the differences among the three conditions are greater for the figures than for the colors. As the histogram shows, with one's own names, identification accuracy is higher for the nonsense figures than it was for the colors (about 86% versus 74%, respectively). However, it is not simply the case that figures are easier to encode than colors. With another person's messages, accuracy is lower for figures than for colors (about 50% versus 57%).

A lexical analysis of messages in the two conditions yields some insight into the differences in language responsible for the differences in recognition accuracy. Nonsocial messages were less than half as long as social messages, and they were considerably less stereotyped and more diverse

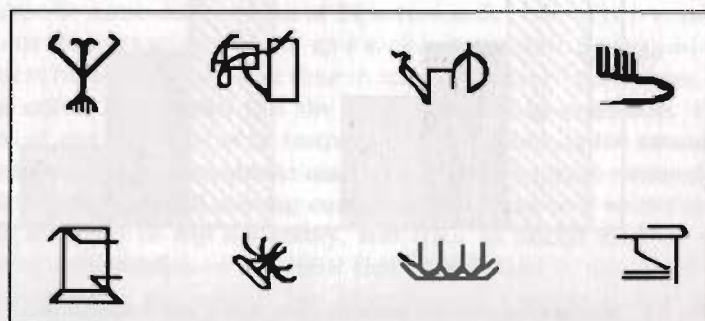


Fig. 5.2. Some of the "nonsense figures" used as stimuli.

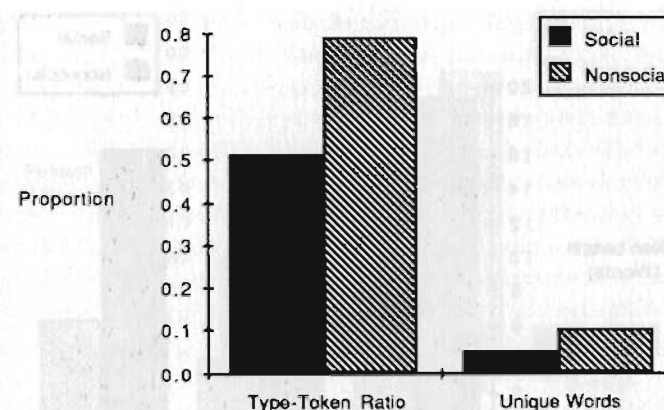


FIG. 5.3. Lexical properties of Social and Nonsocial messages. (Data from Fussell & Krauss, 1989.)

lexically. For each subject, we computed two indices of lexical diversity: (a) *Type-Token Ratio* (TTR)—the ratio of the number of different words used in a speaker's messages (types) to the total number of words (tokens). The higher the TTR, the greater the lexical diversity of the speaker's messages; (b) *Unique Words*—the proportion of words in a subject's messages that were not found in any other subjects' messages. Figure 5.3 shows the results of this analysis. On both the TTR and the unique words measures, nonsocial messages were significantly more diverse than social messages.

We hypothesized that these lexical differences resulted from different strategies adopted by senders in the two conditions. There appeared to be three strategies our describers used in characterizing the nonsense figure stimuli. One was to describe them analytically, in terms of their geometric elements—as a collection of lines, arcs, angles, and so forth. A second is to describe them in terms of the objects or images they suggest—for example, a "Picasso nude" or a "skinny crayfish." We termed the former type of characterization a *literal description*, and the latter kind a *figurative description*. A third strategy, which seemed neither literal nor figurative, was to characterize a figure in terms of a familiar symbol—specifically a number or letter of the alphabet. We called this a *symbol description*.<sup>9</sup> We coded each of our describers' messages for the type of description it contained.

As one would expect, figurative messages tended to be shorter than literal

<sup>9</sup>The symbol descriptions were quite diverse in form, and probably do not represent a distinctive naming strategy. Some were holistic ("capital G" to describe a whole figure), whereas others were rather analytic ("E, backward 4, and angle"). The symbol description category reduces the heterogeneity of the other two categories.



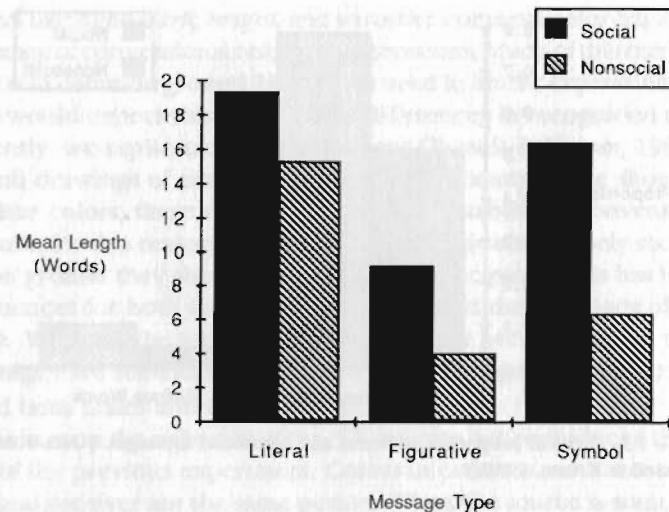


FIG. 5.4. Mean description length by message type and describing condition. (Data from Fussell & Krauss, 1989.)

ones—it takes fewer words to say what something looks like than to list its geometrical elements and describe their spatial arrangement—and this was true for both social and nonsocial describers. As Fig. 5.4 shows, symbol descriptions, which contain both literal and figurative elements, fell midway in length between those two types of messages. We would expect social describers to use more literal descriptions than nonsocial describers, because one can reasonably assume the geometric elements that make up a literal description to be familiar to virtually all college students, and hence part of common ground. Figurative descriptions, however, can be more problematic. If the addressee is unfamiliar with the object the stimulus is being likened to, or cannot see how the figure resembles it, communication will fail. Figurative descriptions are efficient where common ground exists, but if one cannot be sure that it does, it is safer to employ the literal description strategy. As Fig. 5.5 reveals, the preponderance of our describers' messages are figurative. However, social describers produce more literal descriptions and fewer figurative descriptions than nonsocial describers. The proportion of symbol descriptions is just about identical in the two conditions.

In order to examine the relationship between common ground and communicative effectiveness, we categorized each figurative description in terms of the primary concept or image it employed,<sup>10</sup> and then divided our

<sup>10</sup>Typically this was the head noun. For descriptions that used two equally weighted nouns, the first noun was taken as primary.

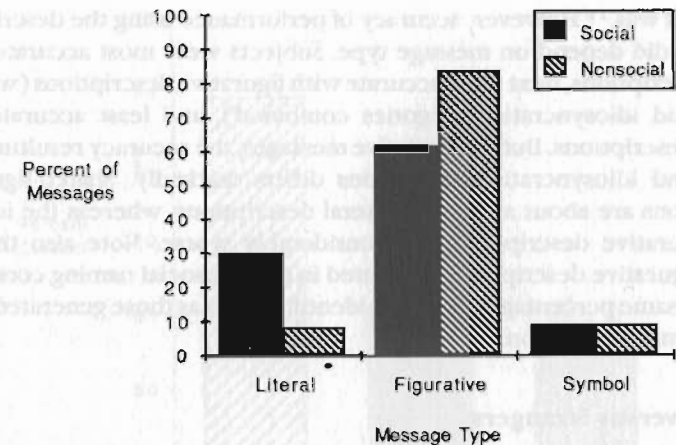


FIG. 5.5. Proportion of literal, figurative and symbol-based descriptions in the two describing conditions. (Data from Fussell & Krauss, 1989.)

messages into those in which the primary concept was *shared* (i.e., occurred in seven or more descriptions of a given stimulus) and those in which it was *idiosyncratic* (i.e., occurred in fewer than seven descriptions). We then examined the relationship between message type and communication effectiveness, with the figurative descriptions divided into those whose primary concept was shared or idiosyncratic. As Fig. 5.6 shows, subjects using their own descriptions were about equally accurate regardless of the type of

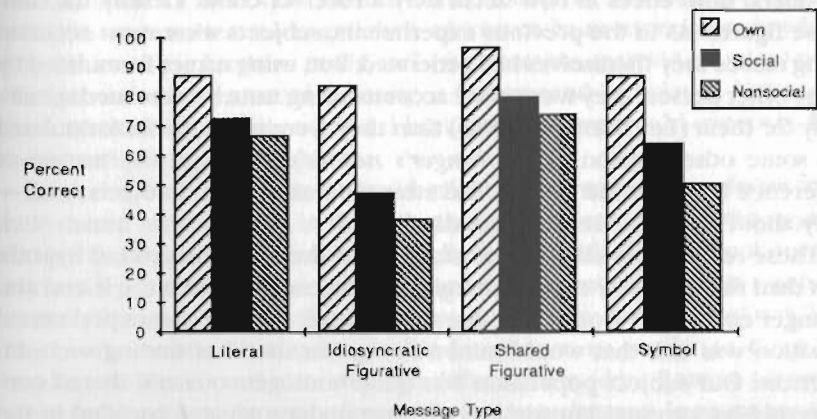


FIG. 5.6. Percent of correct identifications from Self, Other-Social and Other-Nonsocial messages for four message types. (Data from Fussell & Krauss, 1989.)



message it was.<sup>11</sup> However, accuracy of performance using the descriptions of others did depend on message type. Subjects were most accurate using literal descriptions, next most accurate with figurative descriptions (with the shared and idiosyncratic categories combined), and least accurate with symbol descriptions. But for figurative messages, the accuracy resulting from shared and idiosyncratic descriptions differs markedly. Shared-figurative descriptions are about as good as literal descriptions, whereas the idiosyncratic-figurative descriptions are considerably worse. Note also that the shared-figurative descriptions generated in the nonsocial naming conditions elicit the same percentage of correct identifications as those generated in the social naming condition.

### Friends versus Strangers

The distinction between self and other is rather a rudimentary one (although George Herbert Mead contended that it is the distinction on which all further differentiations of the social world are based), but can it be shown that we differentiate between message recipients when one them is not ourselves? Using the same experimental paradigm, we recruited pairs of subjects who identified themselves as friends (Fussell & Krauss, in press). Then we had each label the nonsense figures so that his or her friend could identify them. A couple of weeks later, we had all our subjects return and try to identify the nonsense figures on the basis of three types of names: the names that the subject him- or herself had generated (we call these *own names*), the names the subject's friend had generated (we call these *friend's names*), and the names that a randomly selected other subject had generated for his or her friend (*stranger's names*). As Fig. 5.7 illustrates, the three types of names produced differences in how accurately a receiver could identify the nonsense figures. As in the previous experiments, subjects were most accurate using names they themselves had generated. But, using names formulated by some other person, they were more accurate using names formulated specifically for them (i.e., *friend's names*) than they were using names formulated for some other person (i.e., *stranger's names*). Although the margin of difference between the friend's and stranger's names conditions is small—only about 5%—it is reliable statistically.

These results provide stronger support for the common ground hypothesis than the relatively narrow margin of difference between the friend and stranger conditions would lead one to conclude, because the experimental situation was one that would minimize the likelihood of finding such differences. Our subject population was quite homogeneous and shared considerable background knowledge; all were undergraduates enrolled in the

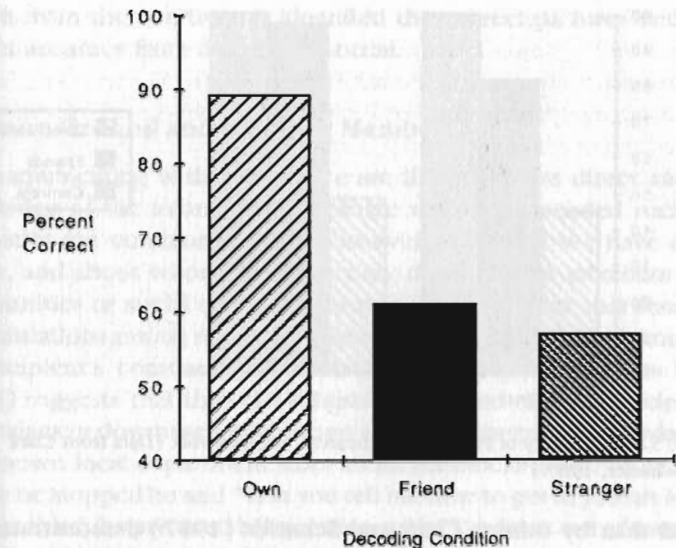


FIG. 5.7. Identification accuracy for Own, Friend's, and Stranger's names. (Data from Fussell & Krauss, in press.)

same introductory psychology course. Theoretically, the common ground between two randomly selected subjects would be considerable. In addition, most of the friendships in our study were of quite recent vintage and relatively superficial; some of our subjects did not even know their "friend's" last name. Few of our pairs were true intimates. That we should have found any differences under such unfavorable circumstances suggests that our subjects were quite skillful in exploiting the common ground that existed between themselves and their addressee. In an experiment in which subjects knew each others really well (for example, married couples) or in which there was substantial diversity in background knowledge (for example, subjects from different cultural backgrounds), we would expect to find considerably larger differences.

In our experiment, subjects could infer the addressee's knowledge from their shared memberships in the Columbia student community, the population of 18–21 year olds, American society, and so forth. They did not need to rely heavily on their private common ground (i.e., knowledge that was both mutually known and exclusive to this pair), and many probably did not. This may be the reason that messages for friends are so similar to those for "another student," and also why the difference in identification accuracy between friends' and strangers' messages is relatively small. In situations that accentuate privately shared knowledge and/or restrict the use of community common ground, messages for a friend should be much better understood by

<sup>11</sup>This was true for describers in both in the social and nonsocial describing condition.



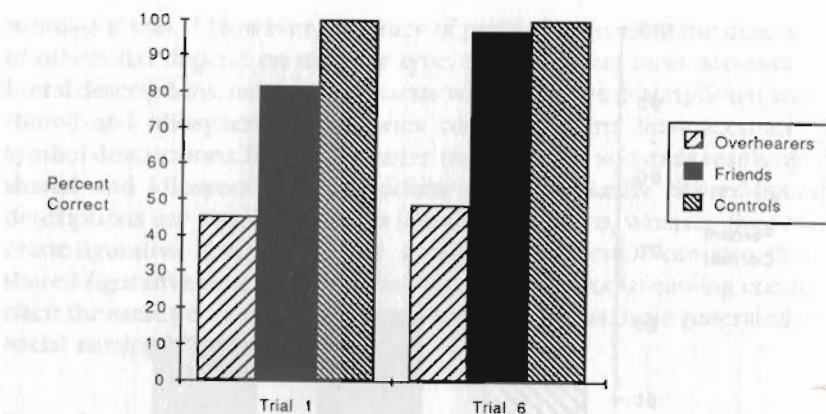


FIG. 5.8. Accuracy of Friends, Overhearers, and Controls. (Data from Clark & Schaefer, 1987.)

that friend than by others. Clark and Schaefer (1987) demonstrated this, using an interactive (conversational) version of the referential communication task in which one member of a pair of student friends tried to refer to a series of pictures of campus scenes in such a way that their friend could identify the correct pictures, but another student overhearing the description could not. As Clark and Schaefer noted, this task should be impossible for unacquainted pairs of students. Their results are summarized in Fig. 5.8. Friends' accuracy is high relative to that of overhearers, and the accuracy of the latter group does not improve appreciably over six trials. Presumably the overhearers' failure to show improvement is a consequence of their inability to build up common ground with the speaker.

The results demonstrate that subjects are able to distinguish between private and community-wide knowledge, although with less-than-perfect success, because overhearers could interpret almost half of the messages.<sup>12</sup> The results also shed some light on the contents of privately shared common ground. The kind of knowledge subjects used to construct their messages concerned events at which both were present, their habitual activities, similarities between depicted items and other mutually known things, and mutually known locations. Nevertheless, it was more difficult to construct messages based solely on private knowledge than to use the shared lexical terms for the depicted entities that are common ground in that community. Subjects run in a control condition, in which content did not have to be

<sup>12</sup>It may also have been the case that subjects were aware their messages utilized community-wide knowledge but were unable to think of knowledge shared with their friend that would have helped him or her locate the referent.

hidden from the overhearer, identified the correct pictures with virtually perfect accuracy from the very first trial.

### Common Ground and Category Membership

In communicating with friends, we are likely to have direct and detailed knowledge of the information we share with our intended recipient. But frequently we communicate with individuals whom we have never met before, and about whom we know only that they are members of certain communities or social categories. Is there any evidence that senders make differentiations among receivers when all they have available is knowledge of the recipient's community membership? A study by Douglas Kingsbury (1968) suggests that they do. Kingsbury stopped randomly selected male pedestrians in downtown Boston and asked for directions to Jordan Marsh, a well-known local department store about six blocks away. To a third of the people he stopped he said "Can you tell me how to get to Jordan Marsh?" To another third, he prefaced his question with "I'm from out of town." To the remaining third, he asked the unprefaced question, but employed what he called a rural Missouri accent. He covertly tape-recorded their responses.

Kingsbury transcribed these responses and performed a variety of analyses on them. We discuss only two: the two number of words in the respondent's directions, and the number of places enroute to the destination referred to by the respondent. As is shown in Fig. 5.9, when Kingsbury prefaced his question with "I'm from out of town," he received longer and more detailed responses than he did to the unprefaced question. In a sense, this is not particularly surprising. By the maxim of relevance, when Kingsbury prefaced his question by stating that he was from out of town, he was implicitly indicating something about the information he lacked.<sup>13</sup> It is more surprising that the rural Missouri accent—exotic even in cosmopolitan Boston—produced results quite similar to the explicit statement. It seems reasonable to assume that respondents assigned the questioner to a category of persons who lack certain kinds of local information, and they inferred this from his speech.

The results of Kingsbury's field experiment, and a laboratory study by Isaacs and Clark (1987) to be discussed later, suggest that speakers make inferences about what their addressees are likely to know from the social categories to which they belong. But we are a long way from understanding in detail how this process works. Just how does a speaker who believes or suspects that an addressee is a member of a particular social category establish the boundaries of that person's category-related knowledge? It seems reasonable to expect a member of the category "New Yorker" to know

<sup>13</sup>For example, one would not say, "I'm from out of town. Can you tell me the time?"



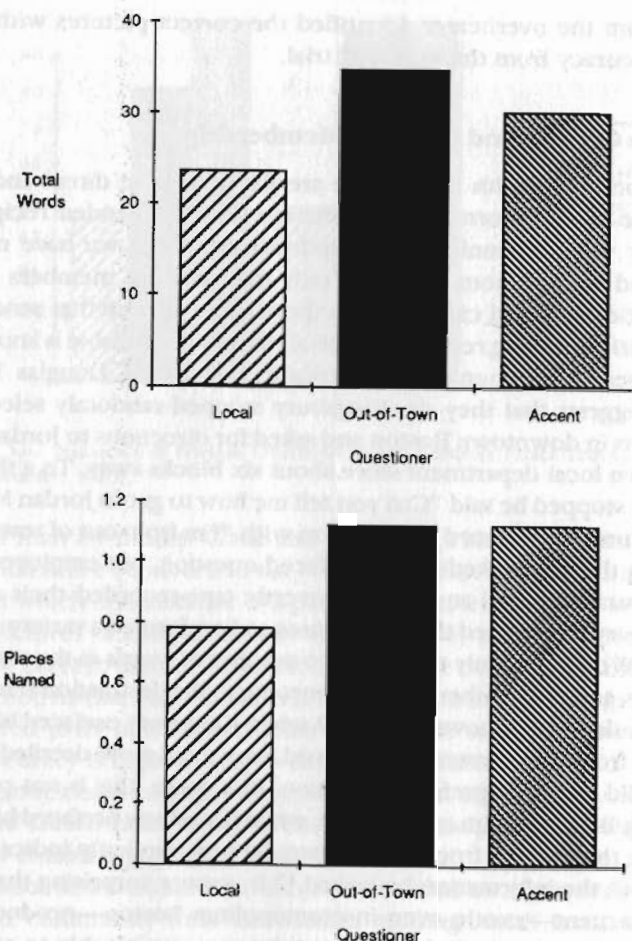


FIG. 5.9. Number of words in response and number of places named as a function of questioner condition. (Data from Kingsbury, 1968.)

the location of such landmarks as the Empire State Building or St. Patrick's Cathedral, and less reasonable to expect that person to be familiar with such arcanae as the Woolworth Building or the Museum of Colored Glass and Light. But it is not clear how these expectations are formed.

There is, by now, an extensive social psychological literature on the process by which perceivers make attributions about the predispositions of others based on behavioral or categorical information (see, for example, Cantor, Mischel, & Schwartz, 1981; Hastie, 1982; Markus & Zajonc, 1985; Taylor & Crocker, 1981), but this research has been concerned almost exclusively with predispositions that derive from motivational state or per-

sonality type. Still, whereas people may infer from the fact that someone is a librarian that he or she is likely to be introverted (Snyder & Cantor, 1979), this certainly does not exhaust the inferences that can be drawn from this bit of categorical information. Librarians can reliably be assumed to know certain things that nonlibrarians may or may not know, and certainly communicators utilize such assumptions when they formulate messages. In research currently underway, we are investigating the ways speakers utilize categorical information about their addressees in formulating messages.

### THE COORDINATION OF MEANING

Most of the research discussed thus far has not involved interaction between speaker and addressee.<sup>14</sup> The methodological reasons for doing this are probably obvious, but it is a mistake to assume that a static simulation can capture the essential character of interactive phenomena. We can write letters that will communicate to their addressees and prepare talks that we later deliver to audiences at scientific meetings, but such messages are different in significant ways from those we transmit in conversation.<sup>15</sup>

The messages transmitted in conversation—or utterances, as we are more accustomed to calling them—differ from the kinds of messages subjects formulate in our static simulations in a variety of ways. First, the addressee can participate in the formulation of an utterance in a way that the target of the communication in a static simulation cannot. In the latter situation, the addressee does contribute to the formulation of the message to the extent that his or her characteristics help define the common ground on which the message rests. Even if the target is some vague other person, the speaker must make some assumptions about what he or she knows. The assumption may be quite general (e.g., that the recipient will know the referent of the word

<sup>14</sup>Even in the Kingsbury study, the interactive component was negligible. The questioner's behavior was programmed as much as possible to keep conditions constant across subjects.

<sup>15</sup>The mutual knowledge problem, as posed by Clark and Marshall, may be more a logical than a practical problem for communicators in face-to-face interaction. Sperber and Wilson (1986) argued that the establishment of common ground is neither necessary for communication, nor practically feasible. Mutual knowledge is a necessary condition for communication only if we demand that communication be error free—that the meaning the listener comprehends is precisely the one the speaker intended. Certainly there are circumstances in which the parties will strive to achieve this, and on such occasions they will go to great lengths to establish what is mutually known. As the current (as of the time of this writing) Senate debate on the ratification of the SALT Treaty demonstrates, complete mutual understanding is difficult to achieve, even by professionals skilled in the language of diplomacy. But in most everyday communication situations, such precision is unnecessary. The consequences of misunderstanding are minor, and the dynamics of conversation provide a mechanism by which important misunderstandings can be detected and repaired.



*indigo* or will not know what an inductorium looks like), but without some such assumptions the speaker would have no reason for differentiating between messages for his or her own use and message directed at another person. In conversation, however, the addressee is free to respond directly—to ask questions, to paraphrase, to seek clarification.<sup>16</sup> Moreover, work by Kraut and his colleagues (discussed later) and Duncan and Fiske (1977) suggests that people routinely utilize a signalling system in face-to-face interaction whose function it is to make sure the interacting parties are coordinated with respect to meaning. In such situations the meaning of an utterance seems more akin to something that is arrived at collaboratively by the participants, rather than a property of messages that is encoded by the speaker and decoded by the listener (Clark & Wilkes-Gibbs, 1986; Krauss, 1986, 1987).

### The Evolution of Referring Expressions

An examination of the development of referring expressions yields some insight into the process by which participants collaborate in the formulation of meaning. Frequently we need to refer to something lacking a name or whose name we do not know. For example, one of us recently went to a local hardware store and asked for "one of those things with springs at both ends that keeps the roll of toilet paper from falling out of the holder." When the clerk returned with the object he had requested, out of curiosity he asked what the thing was actually called. She replied, "We just call it the thing with springs at both ends that keeps the roll of paper from falling out of the holder."<sup>17</sup> Although this referring expression will get you the object you want, it is unlikely that so unwieldy a name would be used for anything that was referred to frequently. As Zipf (1935) demonstrated, in languages there is a systematic negative relationship between the frequency with which a word is used and its length. The process appears to be a dynamic one. Lengthy terms that enter the language and then achieve currency are shortened to a more manageable length. Thus photographers call *hypobiosulfate of soda solution* "hypo," *random access memory* is referred to as "RAM" by computerists, and on rainy nights we stand on street corners and vainly try to find a "taxi," not a *taximeter cabriolet*.

<sup>16</sup>Such referential strategies as try-markers—combining a declarative utterance with a rising intonation to signal that the addressee may be unfamiliar with the thing being referred to (Sacks & Schegloff, 1979)—require feedback from the listener, and thus are restricted to interactional contexts. These forms of reference are reviewed by Clark and Wilkes-Gibbs (1986).

<sup>17</sup>One of us has made a modest and unsystematic effort to learn the name for this object, without success. Most of the people queried say that the thing has a name and that they once knew it, but are unable to think of it at the moment.

The process by which descriptions of innominate objects are transformed into referring expressions illustrates some of the dynamic factors involved in the development of common ground (Carroll, 1985). Imagine that two people have to communicate on a series of occasions about nonsense figures that have no names and do not bear a close resemblance to anything in particular. Typically, on successive references, a name for the nonsense figure evolves in a reasonably orderly way. The process is illustrated in Fig. 5.10. On their first reference to one of these stimuli, most people use a long and rather unwieldy referring expression that is more like a description than a name. But over the course of successive references, typically this phrase is shortened to one or two words. Often the referring expression that the pair finally settles on is not one that, by itself, would evoke the stimulus. Its use presumes the mutual knowledge that has accrued over the course of its development. In the example shown in Fig. 5.10, it is unlikely that *Martini*, by itself, would direct an uninitiated listener to the correct figure. Similarly, few people who try to hail taxis are aware that the term they use derives etymologically not from the vehicle but from the meter that calculates the cost of the trip by measuring the distance traversed.

It was our hypothesis (Krauss & Weinheimer, 1964) that this process of shortening was heavily dependent on back-channel responses transmitted by the receiver. Without the information contained in such responses, we speculated, a sender could not confidently assume the receiver would be able to understand the message and, in order to prevent errors, would maintain a relatively high level of redundancy. In effect, the back channel

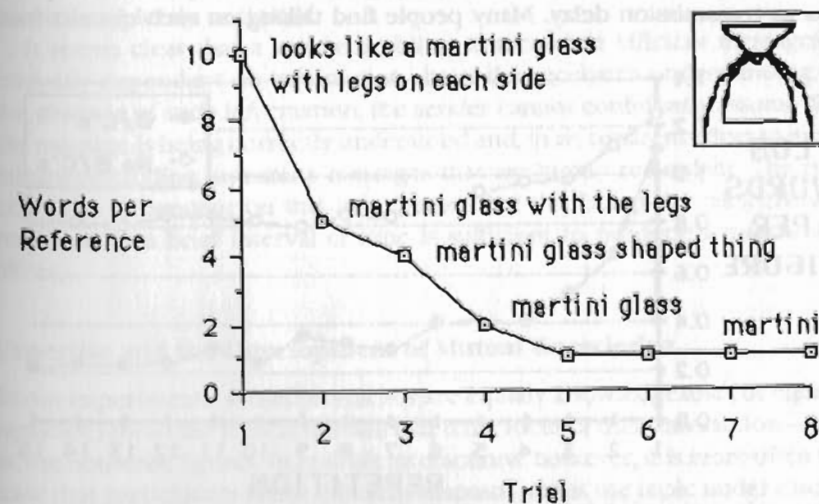


FIG. 5.10. Illustration of shortening of referring expression over successive references.



responses serve to establish what is and is not in common ground. If our hypothesis was correct, then reducing the amount of back-channel information should affect the rate at which the sender shortens the referring expressions for the nonsense figures. We designed an experiment in which we could compare the performance of dyads using bidirectional circuits (on which the receiver as well as the sender could transmit) with dyads using unidirectional circuits (on which only the sender could transmit). Curves representing the average number of words in the first, second, and subsequent references to the figures in the two experimental conditions are shown in Fig. 5.11. Preventing the sender from receiving back-channel responses produced a flatter curve, compared with the situation in which such responses were available to the sender (Krauss & Weinheimer, 1966). That is, in the absence of back-channel responses, the names used to refer to the stimuli were shortened at a much slower rate.

It is not necessary to eliminate back channels entirely in order to demonstrate the extent of communicators' dependence on them for formulating efficient referring expressions. A similar, albeit somewhat less dramatic, result can be achieved simply by inserting a delay loop in the circuit, and thereby temporally displacing the back-channel response. We used three delay intervals: zero delay, 0.6 second delay, and 1.6 second delay. As Fig. 5.12 shows, a delay of 1.6 seconds is sufficient to disrupt the ability of the sender to refer efficiently to the strange stimuli, despite the fact that the back-channel response is eventually transmitted (Krauss & Bricker, 1966). Something very much like this condition is familiar to most of us. Satellite circuits often involve appreciable propagation times experienced by the user as transmission delay. Many people find talking on such circuits frus-

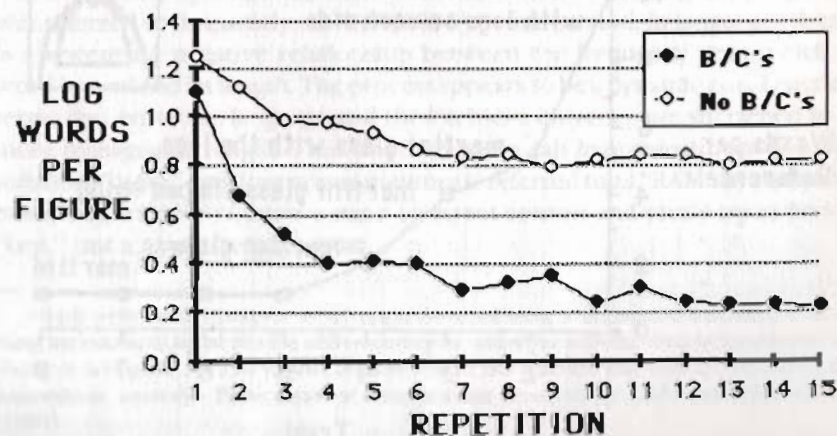


FIG. 5.11. Changes in length of referring expression as function of availability of back-channel responses. (From Krauss & Weinheimer, 1966.)

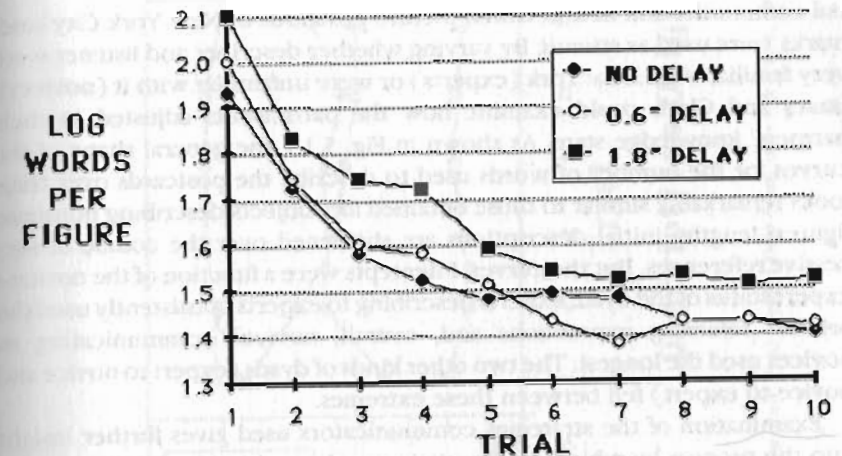


FIG. 5.12. Change in length of referring expression as function of delay interval. (From Krauss & Bricker, 1967.)

trating and feel the delay affects the quality of their communication, although we know of no research to this point.

Of course, in everyday face-to-face communication, a variety of visible signals also convey back-channel information—smiles, head shakes and nods, and the like. Visible back channels can compensate for the absence of vocal information (Krauss, Garlock, Bricker & McMahon, 1977). With visible information available, the effect of delayed transmission of verbal information is completely mitigated.

It seems clear that a speaker's ability to formulate efficient messages is critically dependent on information about the receiver's understanding. In the absence of such information, the sender cannot confidently assume that the message is being correctly understood and, in an apparent effort to avoid misunderstanding, transmits messages that are highly redundant. The process is so dependent on this information that displacing the back-channel response by a brief interval of time is sufficient to produce a measurable effect.

### Expertise and the Development of Mutual Knowledge

In our experiments, subjects typically are equally knowledgeable (or equally ignorant) about the topical domain that is the focus of their interaction—that is, the nonsense figures. In real-life interactions, however, it is more often the case that participants know different amounts about the topic under discussion, and this fact must be taken into account as they formulate their contributions. Isaacs and Clark (1987) simulated this process with a referen-



tial communication task in which picture postcards of New York City landmarks were used as stimuli. By varying whether describer and listener were very familiar with New York (experts) or were unfamiliar with it (novices), Isaacs and Clark could examine how the participants adjusted to their partners' knowledge state. As shown in Fig. 5.13, the general shape of the curves for the number of words used to describe the postcards over trials looks remarkably similar to those obtained for subjects describing nonsense figures: lengthy initial descriptions are shortened over the course of successive references. But the curves' intercepts were a function of the novice-expert status of the dyad. Experts describing to experts consistently used the briefest referring expressions and, overall, novices communicating to novices used the longest. The two other kinds of dyads (expert to novice and novice to expert) fell between these extremes.

Examination of the strategies communicators used gives further insight into the process by which each participant adjusted to his or her partner's knowledge state. Isaacs and Clark (1987) classified the communications into those that used proper names to refer to the landmarks, those that referred by describing the landmarks, and those that combined names and descriptions. As Fig. 5.14 indicates, proper names were used by describers in expert-expert dyads at a consistently high rate across the six trials, whereas the rate for novice-novice dyads was quite low. Conversely, the rate of descriptions is high for dyads in which both participants are novices and low for those in which both are experts. This is not entirely surprising. If both participants have the requisite expertise, it is both simpler and more

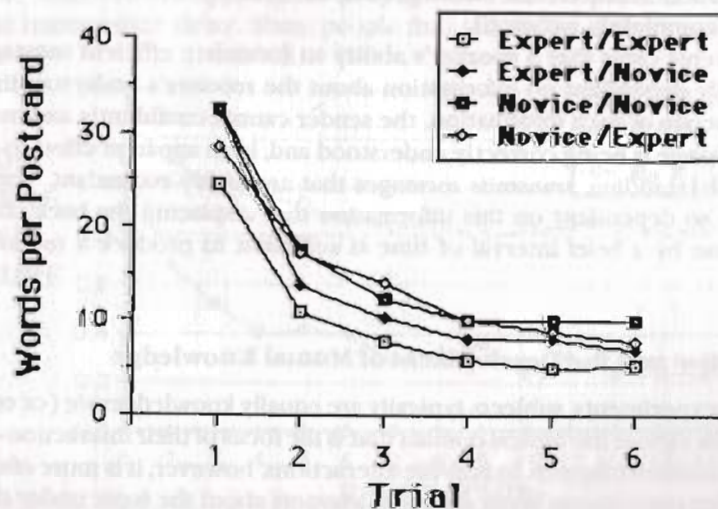


FIG. 5.13. Mean number of words needed to describe a postcard. (Estimated from Isaacs & Clark, 1987.)

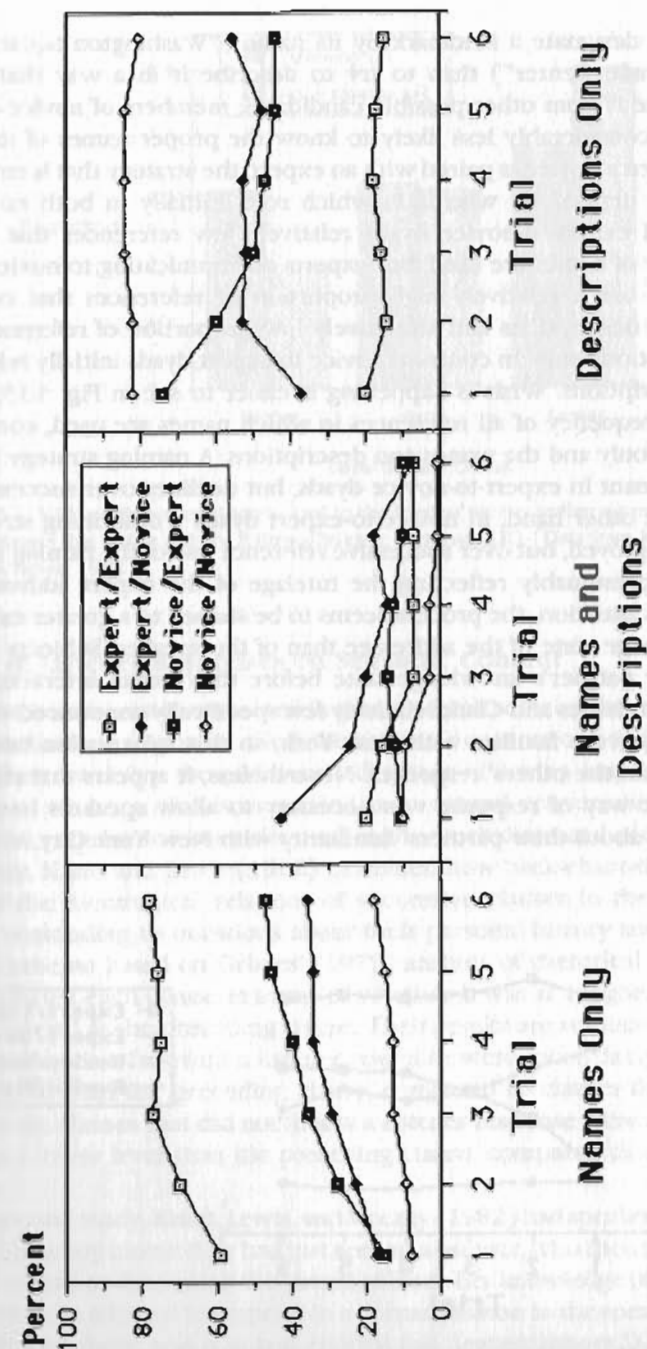


FIG. 5.14. Percent of references by Name Only, Name and Description, and Description Only in the four dyad types. (Data from Isaacs & Clark, 1987.)



reliable to designate a landmark by its name ("Washington Square Park" "World Trade Center") than to try to describe it in a way that would differentiate it from other possible candidates; members of novice-novice dyads are considerably less likely to know the proper names of the landmarks. When a novice is paired with an expert, the strategy that is employed appears to depend on who is in which role. Initially in both novice-to-expert and expert-to-novice dyads relatively few references that consist exclusively of names are used, but experts communicating to novices tend initially to use a relatively high proportion of references that combine names and descriptions and a relatively low proportion of references that are descriptions only. In contrast, novice to expert dyads initially rely mainly on descriptions. What is happening is easier to see in Fig. 5.15, which plots the frequency of all references in which names are used, combining the names only and the names and descriptions. A naming strategy initially is predominant in expert-to-novice dyads, but declines over successive trials. On the other hand, in novice-to-expert dyads a describing strategy is initially employed, but over successive reference use of the naming strategy increases, presumably reflecting the tutelage of the expert addressee. At least in this situation, the process seems to be shaped to a greater extent by the knowledge state of the addressee than of the speaker. Subjects did not know their partner's knowledge state before they began interacting, and according to Isaacs and Clark relatively few specifically announced whether or not they were familiar with New York, so this information had to be inferred from the others' responses. Nevertheless, it appears that relatively little in the way of response was necessary to allow speakers to reach a conclusion about their partners' familiarity with New York City.

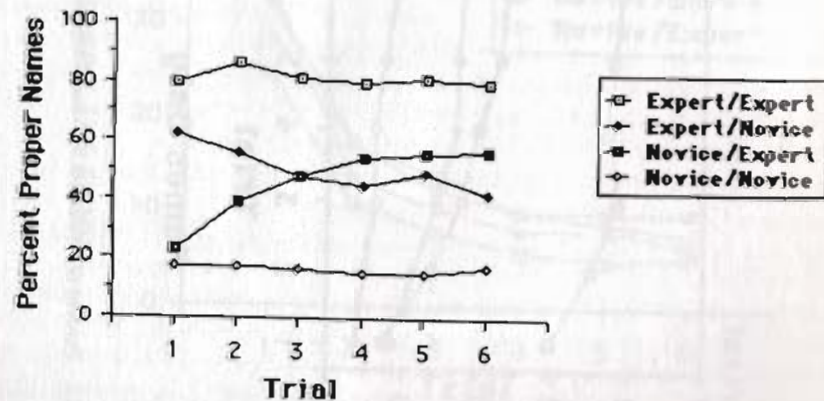


FIG. 5.15. Percentage of descriptions using a proper name on the first postcard. (Data from Isaacs & Clark, 1987.)

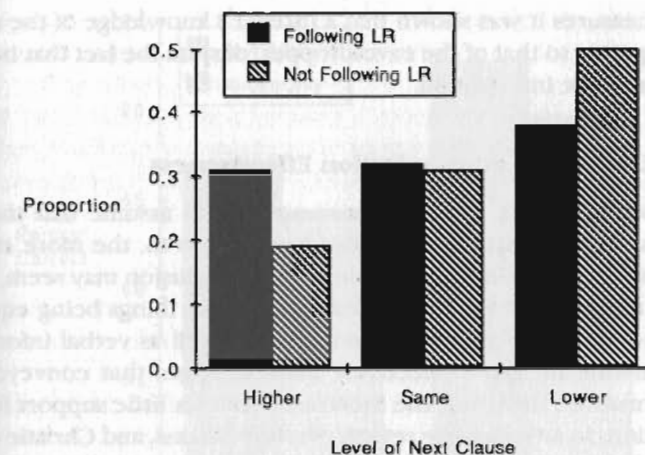


FIG. 5.16. Relation of clause's level to the level of the preceding clause for clauses that did or did not follow a listener response (LR). (Data from Kraut & Lewis, 1982.)

### Effects of Listener Responses on Semantic Content

Kraut and his associates examined in greater detail some of the mechanisms by which listener responses affect the semantic content of a speaker's messages. Their work has the additional advantage of having employed an experimental situation that is more similar to natural conversation than the referential communication tasks used in the work discussed previously. In one study, Kraut and Lewis (1982) examined how back-channel responses affected the hierarchical relations of successive clauses in the speech of people responding to questions about their personal history and opinions. Using a scheme based on Grimes' (1975) analysis of rhetorical predicates, they classified each clause in terms of whether it was at a higher, lower, or the same level as the preceding clause. Their results are summarized in Fig. 5.16. Clauses that followed a listener response were more likely to be at a higher level than the preceding clause, compared to clauses that did not. Conversely, clauses that did not follow a listener response were more likely to be at a lower level than the preceding clause, compared to clauses that did not.

In a second study, Kraut, Lewis, and Swezey (1982) had speakers relate the plot of a cowboy movie they had just seen to a listener, who then took a set of objective tests to determine the extent of his or her knowledge of the movie. Listeners were allowed to respond in a normal fashion to the speaker, but for each listener there was a yoked control (an "eavesdropper") who heard everything the speaker said but was unable to interact with him or her. On a



variety of measures it was shown that a listener's knowledge of the movie's plot was superior to that of the eavesdropper, despite the fact that both had access to the same information.

### Modality Effects on Communication Effectiveness

From the proceeding it would seem reasonable to assume that the more information the communicating parties have access to, the more effective their communication will be. Plausible as that conclusion may seem, it does not appear to be generally true. For example, other things being equal one might expect messages that conveyed visual as well as verbal information would communicate more effectively than messages that conveyed only verbal information. However, the literature provides little support for such an expectation. In an extensive review, Short, Williams, and Christie (1976) found very few studies that reported differences of any kind between communication using channels carrying only vocal information and communication using audio-visual channels (see also Williams, 1977). As surprising as it may seem, the differences that are found are not always in the direction one would expect.

As part of a study that is still in progress, speakers were videotaped describing nonsense figures like those in Fig. 5.2 either face-to-face to listeners seated across a table from them or over an intercom to listeners located in another room. These descriptions were then played, either in a normal picture plus sound (audio-video) version, or a sound-only (audio-only) version, to a new set of listeners who tried to identify the figures being described. Not surprisingly, the availability of visual information made little difference in terms of listeners' accuracy for Intercom describers. Given that their listeners couldn't see them, speakers sensibly encoded the necessary information verbally. More surprising is the fact that the availability of visual information was no more helpful for Face-to-Face decoders, and that overall, the performance of our Face-to-Face describers was slightly less good than that of the Intercom describers. The data is shown in Fig. 5.17. Note that the accuracy rate for the two intercom conditions is higher by a small (but statistically reliable) margin than the Face-to-Face conditions.<sup>18</sup> Even with stimuli as graphic as these, visual information seems to have no unique value. Our impression is that face-to-face describers tended to overestimate the usefulness of visual information<sup>19</sup>, and gave rather sketchy verbal descrip-

<sup>18</sup>While mean performance is better in the Audio-Visual condition than in the Audio-Only condition, this difference does not approach significance.

<sup>19</sup>Some face-to-face speakers seemed not to appreciate that their listeners were seeing a mirror image of the shapes they drew in the air or formed with their hands. With stimuli that were bilaterally asymmetrical, this could be quite confusing.

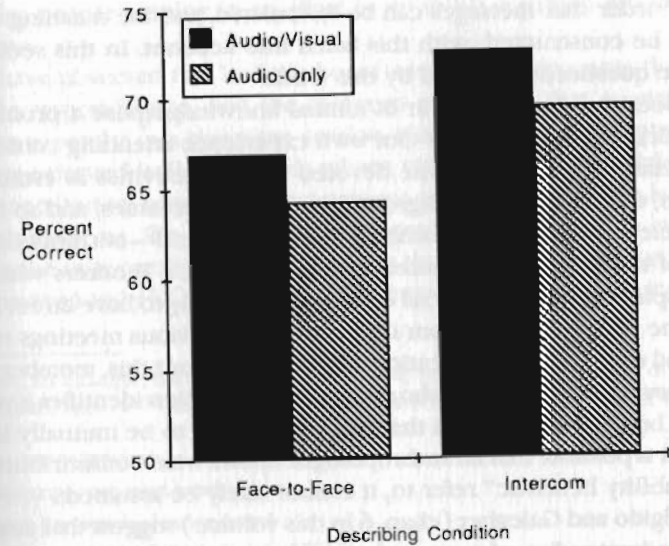


FIG. 5.17. Accuracy of communication of Face-to-Face and Intercom descriptions presented in Audio-Only and Audio-Video versions.

tions. Intercom describers, because they were unable to utilize visual information, seemed to put more effort into the formulation of their verbal messages. We are still working on the analysis of the messages in the two describing conditions to try to understand the ways in which the two kinds of descriptions differ.

### IMPLICATIONS FOR TECHNOLOGY AND COOPERATIVE WORK

It seems reasonable to assume that communication is a necessary condition for cooperative work to be accomplished, and that technology makes a variety of kinds of communication possible. The work discussed here has examined one function of communication—information exchange. Certainly this is an important function, but it's probably a good idea for those of us who work in this area to remind ourselves periodically that it is not the only purpose that communication serves and, in many situations, it may not be the most important one (Higgins, 1981). People communicate for a variety of reasons, and a technology that optimizes the efficiency of information exchange may be less than optimal insofar as the other functions are concerned. The research reviewed here has focused on a problem that communicators have to deal with—the need to establish what is mutually



known in order that messages can be formulated, and the meaning of messages can be constructed, with this taken into account. In this section we pose some questions suggested by this work.

First, does the determination of mutual knowledge pose a problem for people working cooperatively? Our own experience attending conferences suggests that the amount of time devoted to such activities as establishing definitions, describing the background and history of issues, and so forth—tasks directed primarily at establishing common ground—is a function of the number of disciplines represented at the conference. Workers within the same disciplinary area (e.g., social cognition) are likely to have direct knowledge of one another, either from interactions at previous meetings or from having read each others' publications. But even without this, membership in the category of psychologists who study social cognition identifies a vocabulary and a body of information that can be assumed to be mutually known. Although it is possible that an anthropologist knows what "misattribution" or "the availability heuristic" refer to, it cannot safely be assumed.

Kraut, Egido and Galegher (chap. 6 in this volume) suggest that achieving a shared understanding of a research question is a difficult process typically requiring a number of face-to-face meetings for resolution. Certainly there are a number of reasons why face-to-face meetings are particularly helpful at this critical stage in the development of a research collaboration, but one of them might be that it is easier to construct a body of mutual knowledge in such settings.

One would expect the establishment of common ground to be particularly problematic when two or more groups of individuals, who had previously worked together intensively, are brought together to work on a common task. In such situations, each group is likely to have developed its own "miniculture," with a distinctive vocabulary and mutually known body of information.

In addition, in what ways might technology interact with the mutual knowledge problem? Consider a continuum that has, at one extreme, face-to-face interaction between two coworkers who share an office and, at the other extreme, a message and response on a computer bulletin board. In the former situation, coworkers have a variety of informational sources (e.g., knowledge of their interactional histories, the constraints of the situation, and the dynamic mechanisms of interaction, etc.) to draw on in formulating what is mutually known. In the latter situation, only the information available in the message and response are available.<sup>20</sup> It would be instructive to examine the

<sup>20</sup>Actually, strangers communicating via a computer bulletin board mutually know *something* about each other—they mutually know that they are able to use a computer bulletin board. It follows from this that each is a member of the class of people who know how to (and do) use computer bulletin boards. Very likely other sorts of knowledge is correlated (or perceived to be correlated) with membership in this category.

strategies people employ in an effort to establish common ground in such situations.

We have observed that bulletin board users will often quote the message they are responding to, and the messages preceding that message, which sometimes results in a summary version of the history of the interaction.<sup>21</sup> On issue-oriented bulletin boards where views on controversial issues are aired, contributors may preface a statement of their opinion with information about themselves. We assume that the personal information is intended to provide the interpretive context in which they wish their opinion statement to be understood.<sup>22</sup> On information-oriented bulletin boards, it is not un-

<sup>21</sup>Note, for example, the following. The inequality marks indicate the order of the previous contributions, with <<< the first, and the unmarked contribution the most recent:

From: SOURCENAME

Newsgroups: rec.sport.baseball

Subject: Re: Bench clearing brawl

References: <3159@Portia.Stanford.EDU>

>>>I just saw a good brawl in today's Giants/Cards game in St. Louis.

>>>Will Clark was sliding into second where Oquendo was trying to turn a double play. Clark slid right over and past the bag, tying up Oquendo. Ozzie Smith came into the tie up, and Oquendo then kicked Clark lightly while Clark was still on the ground. Clark got up and pushed Oquendo, but Ozzie clubbed Clark from behind, an all-time cheap shot from an all-time all-star like Smith.

>>Well, first of all, he didn't slide past the bag. He wound up with his right knee practically on the bag. It was a good (albeit hard) slide. He was

>Whoa! I watched the replay of Clark's slide, and if he had tried to slide like that to steal second, he'd have ended up in left field. He started sliding barely 5 feet away from the bag. Hard slide, yes. Good slide, no.

But he wasn't trying to steal second. He was trying to slide in to break up the double play. In this case a hard slide \*is\* a good slide.

<sup>22</sup>For example;

From: SOURCENAME

Newsgroups: soc.culture.jewish

Subject: "Tolerance" and Conservative arrogance

In article PRIORSOURCE writes:

>This "holier than thou" attitude I see of some Orthodox Jews is really annoying. . .

As a "Orthodox" Jew, I will agree with you here. I put Orthodox in quotation marks because although I have most of the outward attributes of an Orthodox Jew (kosher home, tzizit, yamulke, etc.). I suspect that certain other members of the Orthodox community would look at me askance (at least—"pillory" might be the better term) for some of my more radical beliefs, e.g., I think that what Eliezer Berkovits says about non-Orthodox conversions in *Not in Heaven* is perfectly sensible. Actually, I am in sympathy with what Conservative Judaism ought to be. What it is is another matter.



common for novices to declare their beginner status before asking questions or seeking advice.<sup>23</sup> We make no claims for the representativeness of these observations, but it does not seem unreasonable to view these devices as strategies on the part of message sources to construct the common ground necessary to interpret their messages correctly.

Communication technologies make possible a variety of kinds of "mediated" (i.e., not face-to-face) communication. In so doing, these technologies also may disembodify communicators by reducing to a minimum the information they have about those with whom they interact. Some of the consequence of electronic mail and similar kinds of mediation have been studied by Kiesler and Sproull (Kiesler & Sproull, 1986; Siegel, Dubrovsky, Kiesler & McGuire, 1986; Sproull & Kiesler, 1986).

Moreover, should a distinction be drawn between the informative and other functions of communication? A department chairman faced with the unpleasant task of informing a junior colleague that the department had voted not to recommend tenure would probably go to the colleague's office to bring the bad news, rather than using the phone. Certainly the information can be conveyed adequately over the phone, but somehow it seems an inappropriate way to do it—too impersonal and too little concerned with the person's well being. Although such considerations may be unimportant insofar as information exchange is concerned, as McGrath (chap. 2 in this volume) points out, they are significant determinants of group effectiveness.

Although it has been difficult to demonstrate clear performance effects

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In fact, if there was any single moment which convinced me that I was to become an Orthodox Jew it would be when the Orthodox Rabbi at my college Hillel told the members of the kahal that they shouldn't be impolite to the non-Orthodox Jews who met at the same time. "If you're so convinced you're right," he said, "then you should behave in a manner that will make others want to emulate you. Being impolite to them is not such a manner."

[GOES ON TO LENGTHY DISCUSSION OF ISSUES]

<sup>23</sup>For example:

From: SOURCENAME

Newsgroups: rec.food.cooking

Subject: Chicken recipes desperately needed.

This summer is the first time I have actually been on my own and now that I have to cook for myself, I see the problems arising. Don't get me wrong, I love to cook. The problem is coming up with new things to try. I recently took my veal parmigian recipe and made it with chicken breasts, since I could find no veal in this small town.

My question is, what things can be done with chicken, besides frying and baking. Since chicken is always easy to find, and usually cheap I was hoping someone could suggest new and wild ways to prepare it.

Thanks for any help.

attributable to communication modality (Short et al., 1976; Williams, 1977), the difference between talking face-to-face and over a telephone has well-documented psychological consequences. According to Rutter (1987), who provided an extensive review of this literature, the absence of visual information that occurs in telephonic communication, and presumably in many other kinds of mediated interaction (Sproull & Kiesler, 1986), reduces the richness of the social cues available to the participants, increasing the social distance that separates them and causing them to adhere more closely to prescribed task roles. One need not accept Rutter's theoretical analysis of the effects of mediated communication, but it does seem to be the case in a variety of situations that the discussions of subjects communicating via telephone are more task-oriented and contain less personal content than those of people performing the same task face-to-face. One might conclude from these studies that from the point of view of cooperative work, mediated communication has substantial advantages because it seems to promote task-oriented communication. However, it would be unwise to assume that the depersonalization that seems to occur in mediated communication is without cost, especially when long-term cooperative relations that must be responsive to strain are involved (cf. McGrath, chap. 2 in this volume).

Furthermore, are there ways in which technology can reduce the difficulty of formulating what is mutually known? Professors often suggest that before going on job interviews in academic departments, graduate students should spend a bit of time learning about the people they will be meeting with by skimming some recent articles or looking them up in some standard reference source. Part of this is in the service of an ingratiation strategy, but most job candidates also find it easier to talk informatively to someone about their own work if they have some idea with what that person is likely to be familiar and unfamiliar.

Are there ways in which communicators can access information about the people with whom they interact that would make it easier to achieve common ground? The notecard system described by Trigg (this volume) suggests one technology that might aid in this process.

Finally, the research and theoretical ideas discussed here for the most part are relevant to messages that are, in terms of the distinction drawn by Ekman and Friesen (1969), "communicative." What can be said about messages that are "informative"—in other words, that serve as a basis for inferences we make about others but that are not necessarily intended to serve that function. A great deal of information in face-to-face interaction is derived from such things as tone of voice, facial expression, appearance, and so forth. These information sources can be controlled to some extent, but not completely. Some mediated communications systems might be thought of as a filter that acts to eliminate such information. To what extent do these



information sources contribute to cooperative work, and what provision (if any) ought to be made to make them accessible?

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