SOCIAL PSYCHOLOGICAL MODELS OF INTERPERSONAL COMMUNICATION

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1. INTRODUCTION

1.1 Communication and Social Psychology

Social psychology traditionally has been defined as the study of the ways in which people affect, and are affected by, others.[1] Communication is one of the primary means by which people affect one another, and, in light of this, one might expect the study of communication to be a core topic of social psychology, but historically that has not been the case.

No doubt there are many reasons. Among them is the fact that communication is a complex and multidisciplinary concept, and, across the several disciplines that use the term, there is no consensus on exactly how it should be defined. It is an important theoretical construct in such otherwise dissimilar fields as cell biology, computer science, ethology, linguistics, electrical engineering, sociology, anthropology, genetics, philosophy, semiotics, and literary theory. And although there is a core of meaning common to the way the term is used in these disciplines, the particularities differ enormously. What cell biologists call communication bears little resemblance to what anthropologists study under the same rubric. A concept used in so many different ways runs the risk of becoming an amorphous catch-all term lacking precise meaning, and that already may have happened to communication. As the sociologist Thomas Luckmann has observed, "Communication has come to mean all things to all men" (Luckmann, 1993, p. 68).

Despite this, for social psychologists communication (or some equivalent notion) remains an indispensable concept. It's difficult to imagine serious discussions of such topics as social influence, small group interaction, social perception, attitude change, or interpersonal relations that ignore the role communication plays. Yet such discussions typically pay little attention to the specific mechanisms by means of which the process works.

An instructive parallel can be drawn between the way contemporary social psychologists think about communication and the way an earlier generation of social psychologists thought about cognition. It was not unusual in the late 1970s, when social cognition was beginning to emerge as an important theoretical focus, for social psychologists of an earlier generation to observe that social psychology had always been cognitive in its orientation, so that a focus on social cognition was really nothing new. There was some truth to this claim. Even in the hey-day of Behaviorism, social psychologists really never accepted the doctrine that all behavior, social and otherwise, could be explained without invoking what Behaviorists disparagingly termed "mentalistic" concepts (Deutsch & Krauss, 1965). Indeed, the concepts that defined the field (attitude, belief, expectation, value, impressions, etc.) were cognitive by their very nature.

The point is well taken as far as it goes, but it fails to acknowledge the differences between the implicitly cognitive outlook of the earlier social psychology and the study of social cognition. In the former, it was assumed that cognition underpinned virtually all of the processes studied. The ability to think, perceive, remember, categorize and so forth were assumed to be capacities of the normal person, and little attention was paid to the specific details of how these mental operations were accomplished. In order for messages to change attitudes, people must be able to understand them, remember them, think about them, etc. It was assumed that people could and would do these things; exactly how was not thought to be of great consequence.

In contrast, underlying the study of social cognition (as that term has come to be understood) is the assumption that the *particular* mechanisms by which cognition is accomplished are themselves important determinants of the outcome of the process. For example, particularities of the structure of human memory, and of the processes of encoding and retrieval, can affect what will or will not be recalled. One consequence of this difference in emphasis can be seen in an example. In the earlier social psychology, negative stereotypes of disadvantaged minorities were understood as instances of motivated perceptual distortion deriving from majority group members' needs, interests and goals (Allport, 1954). More recently, however, it has been shown that such stereotypes can arise simply from the way people

process information about others, and that invidious motives or conflict are unnecessary for their development (Andersen, Klatsky, & Murray, 1990; Hamilton & Sherman, 1989). While motivation and conflict probably do often play a role in the development of pejorative group stereotypes, apparently it is not a necessary condition for their emergence. (For a historical review of research in this area, see Rothbart & Lewis, 1994.)

In much the same way, contemporary social psychologists acknowledge that communication mediates much social behavior, but seem willing to assume that it gets accomplished, and display little interest in how it occurs. Their focus is on content, not process. As a result, they may fail to appreciate how the communication situation their experiment represents affects the behavior they observe. Recent work by Schwarz, Strack and their colleagues illustrates some consequences of this oversight (Bless, Strack, & Schwarz, 1993; Schwarz, Strack, Hilton, & Naderer, 1991b; Strack & Schwarz, 1993; Strack, Schwarz, & Wäkne, 1991). For example, Strack et al. (1991) elicited subjects' responses to two similar items: (1) "How happy are you with your life as a whole?" and "How satisfied are you with your life as a whole?" For one group of subjects, the two questions were asked in different, unrelated questionnaires; for the other group, the questions were asked in the same questionnaire, set off from the other items in a box labeled "Here are some questions about your life."

Other things being equal, one would expect responses to the two items to be highly correlated. Although *happy* and *satisfied* are not synonymous, they bear many similarities in meaning; certainly there are circumstances that can make one happy but not satisfied, and vice versa, but people who are happy with their lives tend also to be satisfied with their lives. When the two items were presented in separate questionnaires the correlation between responses to them was 0.96, which probably is close to the items' test–retest reliability. However, when the two items were presented successively in the same questionnaire, the correlation was significantly *lower* — $r = 0.65$. At first glance, the result seems anomalous. Other things being equal, the closer two items in a questionnaire are, the greater the correlation we would expect between their responses to be. However, as Strack et al. point out, viewing the two items from a

communicative perspective alters these expectations considerably. Consider the following question-answer sequences as part of dyadic conversations:

Conversation A

Q: How is your family?

A: . . . . . .

Conversation B

Q: How is your wife?

A: . . . . .

Q: How is your family?

A: . . . . . .

In Conversation A, we would expect the respondent to take his wife's well-being into account in answering the question "How is your family?" but in Conversation B we would expect him to exclude his wife's well-being when answering the same question, since that already had been established (Schwarz, Strack, Hilton, & Naderer, 1991a). Schwarz and Strack derive this prediction from a set of *conversational maxims* (Grice, 1975) -- rules to which participants in conversations must conform in order to understand, and be understood by, their coparticipants.[2] To the extent that respondents in the Strack et al. (1991) experiment responded to the questionnaire as though it were governed by the conversational maxims, presenting the Happiness and Satisfaction questions in the same context induced respondents to base their answers on the *distinctive* aspects of the two content domains. Failing to understand the questionnaire as a kind of communication situation could yield quite misleading results.[3]

The social psychologists of an earlier generation who assumed that cognition underpinned the processes they studied were using a model of cognition, however sketchily detailed it may have been. In many cases this implicit cognitive model was adequate to support a serviceable explanation of the social behavior under consideration, but in other cases their understanding of the social process was defective because it rested on inappropriate assumptions about the underlying cognitive process. In a similar way, contemporary social psychologists

who assume that communication is involved in the phenomena they study, but do not consider the specific details of its operation, are implicitly assuming a model of communication. In most cases the assumptions they make about communication may be adequate, but when they are not, the understanding of the phenomena under examination will be defective. For this reason, we think it behooves all social psychologists, regardless of their substantive interests, to be familiar with the processes that underlie communication.

This chapter will review four models of interpersonal communication and some of the research that they have motivated. As was noted above, communication is an incorrigibly interdisciplinary concept, and saying something useful about it in a single chapter requires a considerable narrowing of focus. Despite the length of this chapter, we have had to forego discussing a good deal of relevant work, and to discuss most of the studies we describe in anything like the detail they warrant.

The term *model* is used in a number of quite different ways in science (Lachman, 1960). It can refer both to rather diffuse theoretical perspectives (e.g., "models of man") and to highly specific theoretical descriptions (e.g., "stochastic models of dual-task performance"). We are using the term in the former sense, to point to commonalties of assumptions and emphasis in the approaches different investigators have taken in studying communication. The four kinds of models we will discuss each constitute one way of imposing some measure of order on a very heterogeneous corpus of theory and research. In many cases, the model is implicit in the investigator's approach to the research rather than a position that is stated explicitly. We have tried to formulate the assumptions that underlie an investigator's approach to communicative phenomena, and, based on these assumptions, to identify the type of model that approach represents. As in most classificatory endeavors, some exemplars fit better than others. Although we have tried to avoid being Procrustean, we would not be surprised if some investigators disagreed with our characterization of their work.

The four classes of models we will discuss are *Encoder/Decoder* models, *Intentionalist* models, *Perspective-taking* models, and *Dialogic* models. These models, and the research they

motivate, differ on a variety of dimensions, and we will elaborate on these in the sections below. But one fundamental respect in which they differ is where they locate meaning. For Encoder/Decoder models, meaning is a property of messages, for Intentionalist models it resides in speakers' intentions, for Perspective-taking models it derives from an addressee's point of view, and for Dialogic models meaning is an emergent property of the participants' joint activity.

We focus on models that conceive of communication as a social psychological phenomenon, by which we mean models that conceptualize communication as result of complementary processes that operate at the intrapersonal and interpersonal levels. At the *intra*personal level, communication involves processes that enable participants to produce and comprehend messages. At the *inter*personal level, communication involves processes that cause participants simultaneously to affect, and to be affected by, one another. The aim of a social psychological model is to explain how the two sets of processes operate in concert.

1.2 Defining Communication: Some Options And Problems

Common to all conceptions of communication is the idea that information is transmitted from one part of a system to another, but beyond that, even within the disciplines that focus on human communication, there is little agreement as to just how the concept should be defined. One reason it is so difficult to formulate a satisfactory definition of human communication is that different kinds of communicative acts seem to convey information in quite different ways, and there are a number of alternative conceptualizations of these differences. In understanding this, it is helpful to think of two rather different ways that acts can convey information. Imagine the response elicited by an embarrassing situation. One response might be to say "This is terribly embarrassing." Another response might be to blush conspicuously, while saying nothing. We will refer to any behavior (including an act of speaking) that conveys information as a *signal.* Both blushing and saying "This is very embarrassing" might be thought of as signals signifying an internal state of embarrassment. Blushing is an example of a *sign* or *expressive behavior;* the sentence "This is terribly embarrassing" is an example of a *symbol* or *symbolic behavior.* Although both behaviors convey similar information — that the person is embarrassed — they

do so in quite different ways. Sign and symbol differ both as to the process by which they are produced and the process by which they are understood, and these differences have important consequences for the way they function in communication. Some of these differences are considered in the next section.

1.2.1 Attributes Of Signs And Symbols

Conventional vs. causal significance

A symbol is a signal (behavioral or otherwise) that stands for, or signifies, something other than itself. A symbol's significance (i.e., what it stands for) is the product of a social convention. Typically the connection between a symbol and what it signifies is more-or-less arbitrary[4] -- the symbol represents the thing it signifies because some community of symbol users implicitly has agreed to use it in this way.

A sign is another kind of signal that stands for something other than itself. Unlike a symbol, however, a sign bears an intrinsic relationship to the thing it signifies. Sign and thing signified are causally related; they are products of the same process. People blush because of a (not-completely-understood) physiological process that is part of the physiological response to embarrassing and similar kinds of situations (Leary & Meadows, 1991). Blushing signifies that the person is embarrassed because blushing is a product of the internal state that constitutes embarrassment. Saying "I'm embarrassed" signifies that the person is embarrassed because English language users implicitly have agreed that is what those words mean.

Intentional vs. involuntary usage

By definition, symbol use is an intentional act. Using a symbol involves voluntarily choosing to use it *and* knowing the meaning the symbol conveys. To comprehend the meaning conveyed by a symbol, one specifically must assume that its use was intentional -- that the person intended to convey whatever it is the symbol is understood to mean (Grice, 1969). It is possible for someone to display a symbol without knowing its meaning, as sometimes happens when a child repeats something an adult has said, but we would not regard that as an instance of symbol *use*. In contrast, signs do not require the assumption of intention. Indeed, many signs

are involuntary, and one has little control over them. Although blushing may serve an important social function (Castelfranchi & Poggi, 1990; Leary & Meadows, 1991), even people who blush readily cannot blush at will, nor can they suppress blushing when they are embarrassed.

Because of this difference in intentionality, signals consisting of symbols have an peculiar dual quality that signals consisting of signs may lack. As an activity, symbol use consists of displaying a symbol (uttering a word, making a gesture, etc.). But by virtue of the symbol's meaning, it also constitutes an act of another kind. The panhandler who approaches a prospective donor with hand extended is displaying a symbol (in this case, a symbol of supplication) and at the same time is asking for money. By means of symbol systems (especially language) we can perform such acts as *requesting, promising, asserting, threatening*, etc. (Austin, 1962; Bach & Harnish, 1979; Searle, 1969). Because the symbolic behavior is understood to be intentional -- indeed, attributing meaning to a symbol someone has used requires the assumption that its use was intentional -- the user automatically incurs the responsibility of having intended to communicate the symbol's meaning.[5] Having said "This is terribly embarrassing," the person in the example is responsible for having made that information public. The person whose embarrassment is conveyed by blushing does not incur this responsibility. As Goffman (1967) has noted, certain nonverbal behaviors are socially useful precisely because they enable one to convey information without incurring the responsibility of having done so.

Processes of comprehension

Understanding (i.e., deriving significance from) symbols and signs draws upon different kinds of knowledge. We understand signs because of things we know about the world. In the example, we know the person is embarrassed because we know that blushing and embarrassment are causally related. Based on this knowledge, we can understand a particular instance of blushing by making a causal attribution to its source. It would not be necessary to know what the word *embarrassed* meant to understand the significance of blushing; nor would it be necessary to know what kinds of situations people find embarrassing. Indeed, we may infer that

an individual finds a particular kind of situation embarrassing from the observation that he or she blushes when in it.

In contrast, we understand symbolic behaviors because of things we know about the symbol system -- in the example, because of things we know about the English language. The sentence "This is embarrassing" is understandable even if we happened to be unaware that the specific situation was a potential source of embarrassment, or that embarrassment is frequently accompanied by blushing. We will call the process by which we understand the meaning of symbolic behaviors *communicative inference.* Signs are understood by a process of *causal attribution.*

Processes of production

Symbol use is learned behavior. Although there is considerable evidence that humans have a distinct propensity to acquire and use certain symbol systems, especially so language (Chomsky, 1968; 1992; Pinker, 1984, 1994), the ability to produce them communicatively requires exposure, often of a considerable duration. We do not have to learn to produce signs, although social experience can modify how they are displayed.

1.2.2 Definitional Issues

One respect in which conceptualizations of communication differ is precisely on the issue of how to deal with the distinction between symbolic and expressive behaviors. Ekman and Friesen (1969) and Wiener, Devoe, Rubinow, and Geller (1972) , for example, would restrict the term communication to symbol use. (Ekman and Friesen refer to information conveyed by signs as *informative,* rather than communicative.) In the view of Wiener et al., communication requires "...(a) a socially shared signal system, that is, a code, (b) an encoder who makes something public via that code, and (c) a decoder who responds systematically to that code" (Wiener et al., 1972) The opposite view is offered by Watzlawick, Beavin and Jackson, who explicitly do not distinguish between symbolic and expressive behaviors as sources of information in communication:

> ...it should be made clear from the outset that the two terms communication and behavior are used virtually synonymously...Thus, from this perspective...all behavior, not only speech, is communication, and all communication—even the communicational clues in an impersonal context—affects behavior (Watzlawick, Bavelas, & Jackson, 1967, p. 22).

Both positions present serious problems when one tries to implement them theoretically. The definition proposed by Watzlawick et al. reminds us that *any* behavior, under the appropriate circumstances, potentially is capable of conveying information. If one's goal is to characterize the information *potentially* available in a situation, a definition along the lines of the one proposed by Watzlawick et al. may be useful. However, if the focus is on the information that actually affects the participants in the situation, a degree of differentiation probably is necessary.

The problem with a definition as broad as the one offered by Watzlawick et al. is that it fails to distinguish between the behaviors that are most significant in communication and those that are of little or no importance. It holds that *all* behavior is communication, so long as it occurs in a social situation. One implication of this view is that to understand communication, *everything* the individual does must be taken into account — a prescription that doesn't lead to a practical research strategy. Perhaps more important, neither does it describe what communicators actually do. Individuals involved in a conversation do not, and probably could not, pay equal attention to all of their conversational partners' behaviors, and their selective attention makes sense. All of the partner's behaviors are not equally informative, and people's capacity to process information is limited. By trying to attend to *everything* the other party did, a communicator would in all likelihood miss the main point of the message.

The problems with restricting the term communication to symbolic behavior may be less immediately apparent, but they are no less real. Since Wiener et al. have tried to define what they mean in a formal way, it is their position we will examine, but our comments apply equally well to the distinction drawn by Ekman and Friesen. For Wiener et al., communication is defined by the use of a code. What is a code? They propose four criteria, and indicate why each is important:

A. The behaviors must be emitted by the particular communication group studied. This criterion eliminates idiosyncratic behaviors and meets the requirements of socially shared behaviors.

B. The behaviors must occur in several different contexts. This criterion is likely to eliminate some which are reactions to a specific set of stimulus conditions.

C. The behaviors must be more likely to occur in verbal contexts than in any and all other contexts. If a behavior (e. g., scratching) can occur in any context — that is, with or without an addressee — it is difficult to accept it as a possible component in a communication code.

D. The behaviors as code components should encompass a relatively short time duration. This criterion serves to focus on ongoing experience rather than on socially prescribed patterns of behavior or on behavior related to personality styles (e. g., the wearing of rings or the handling of teacups) (Wiener et al., 1972, p. 209).

Although the subject of the Wiener et al. paper is nonverbal communication, their conception of communication is based on spoken language. They point to a small number of hand gestures (e. g., waving "good-bye," pointing at the addressee to mean "you," the palms-out gesture that can be taken to mean "don't interrupt") that, by their criteria, could be classified as communication, but they argue it is ultimately an empirical question. Such a definition has the not-insignificant virtue of being clear about what is communication and what is not, but its restrictiveness is problematic. The definitional boundaries are arbitrary, and as a consequence, many behaviors that are intrinsic to human communication are excluded. For example, the definition would exclude facial expressions, which occur in both nonlinguistic and nonsocial contexts. Yet, facial expression is a powerfully effective means of conveying certain kinds of information, and is used universally for that purpose (Ekman, 1972; Ekman & Friesen, 1971; Ekman, Friesen, O'Sullivan, Diacoyanni-Tarlatziz, Krause, Pitcairn, et al., 1987; Izard, 1977).

Similarly, such commonly-used symbols as wearing a wedding ring to indicate that one is married or a black armband to signify that one is in mourning — displays whose meanings are

understood by virtually everyone in a culture, and understood to be *intended* to convey that meaning — are not considered communication by this definition. However, it would certainly be incorrect to regard these behaviors as signs. Like words and certain gestures, they are products of social conventions—learned, used intentionally, understood by virtue of knowledge of the conventional system, and so forth. It is not clear in what theoretically important respect they are different from the gesture that signifies "good-bye." Accepting the Wiener et al. definition would seem to require a new category of signals that would be regarded as neither communication (in their terms) nor signs, involving such symbols as wedding rings, military uniforms, political campaign buttons, and the like.

1.2.3 Distinguishing Between Sign And Symbol

There is a fundamental problem with the attempt to distinguish between signals that utilize symbols and those that utilize signs implicit in both Wiener et al's. and Ekman and Friesen's approach: although the difference between sign and symbol seems clear theoretically, in practice, more often than not the distinction can't be drawn in a principled way..

Signs used symbolically

Blushing was chosen as an illustrative expressive behavior because it so nicely fits the specifications of a sign -- there can be little doubt that it is unlearned, involuntary, causally related to what it signifies, etc. These properties make it a good example, but blushing really is atypical in the degree to which it is involuntary. For other signs, involuntariness is less clear. Crying, for example, is ordinarily involuntary, but it can be suppressed to some degree, and some people are able to simulate a pretty convincing episode, complete with real tears.

Consider facial expression, perhaps the most socially important sign, and the subject of considerable research. Like blushing and yawning, facial expression can be a sign of an internal psychological state, and, as such, it appears to be unlearned, involuntary, etc. However, unlike blushing, facial expression is very much subject to voluntarily control. To a considerable extent, we can suppress facial expressions when we don't want others to know what we're feeling, and we can simulate them when we want others to believe we are experiencing a feeling we really

are not (DePaulo, Rosenthal, Green, & Rosenkrantz, 1982; Ekman & Friesen, 1974; Krauss, 1981; Kraut, 1978). One of the child's important tasks in social development is to bring his or her expressive behavior under voluntary control (Morency & Krauss, 1982). Most children eventually learn not to express their disgust facially when presented with a portion of spinach or squid, regardless of how loathsome they find the food. There is considerable evidence that facial expressiveness is very much under control in social situations, and is more likely to represent what the individual would like others to believe he or she is feeling than the feelings actually being experienced (Kraut, 1979).[6] Facial expression, then, might be thought of as a sign (or set of signs) that can be used symbolically, and it is not always easy to tell which type of signal is being displayed on a specific occasion. The same can be said for most expressive behaviors.

Symbol use that functions expressively

In a similar fashion, symbolic behaviors can function as signs. The so-called "Freudian slip" is a vivid example of language use that is both unintended and meaningful. Most slips of the tongue probably reflect relatively simple breakdowns of the speech production process (Fromkin, 1973; Garrett, 1980), and are not particularly revealing of anything beyond that. For example, speakers sometimes exchange word fragments, as when a colleague of ours recently referred to the main Thanksgiving Day activity as *"Turking* the *roastey."* However, on occasion unintentionally uttered words or phrases can express a thought the speaker had not intended to make public. One place this can occur is in "blends" -- speech errors in which two words are fused into one. Blends usually occur when two semantically-related words compete for the same syntactic slot *(lecture + lesson --> lection)*. It sometimes happens, however, that the blended words have little in common semantically, and the blend is due to competing plans for the conceptual content of what is to be expressed (Butterworth, 1982, Levelt, 1989). In *The psychopathology of everyday life*, Freud (described in Levelt, 1989, p. 217) reported on a patient commenting: "Dan aber sind Tatsachen zum *Vorschwein* gekommen," ["But then facts come to *Vorschwein"]. Vorschwein* is a blend of the German words, *Vorschein* (appearance) and *Schweinereien* (filthiness). When questioned, the speaker agreed that the idea of filthiness was

on his mind, and had intruded itself into what was intended to be a neutral comment about someone's appearance.

Slips of the tongue may be useful grist for the psychoanalytic mill, but more important from the standpoint of communication is the aspect of speech called *paralanguage.* Speech contains verbal information in the form of words set in their syntactic matrix; a faithful transcript of speech consists almost exclusively of verbal information. But speech also conveys another kind of information. Vocal information is the name given to what remains in speech when verbal information has been removed — the paralanguage, which consists of such acoustic properties of the speech signal as pitch, loudness, articulation rate, and variations in these properties.[7]

When we listen to speech, we normally hear a combination of verbal and vocal information, but it is possible to process speech electronically in a way that makes its content unintelligible but preserves most of the paralinguistic information (Rogers, Scherer, & Rosenthal, 1971). Such "content-filtered" speech can convey a great deal of information, principally about the speaker's emotional state, and judgments made by naive listeners from unfiltered speech of a speaker's emotional state seems to take such information into account (Burns & Beier, 1973; Krauss, Apple, Morency, Wenzel, & Winton, 1981; Scherer, Koivumaki, & Rosenthal, 1972). In face-to-face interaction, participants have a rich variety of visual information available to them in addition to verbal and vocal information. Some of this information may have symbolic value (e.g., religious ornaments, uniforms, clothing whose style "makes a statement"), and some of the information (e.g., blushing) is in the form of signs. To complicate matters, visual information like gestures and facial expression combines symbol and sign elements in a way that cannot easily be disentangled.

Thus, although the theoretical distinction between symbol and sign seems clear in the abstract, in practice it is a difficult one to draw, and it may be more useful to think of signs and symbols as representing two poles of a continuum rather than discrete categories. Most signals

combine several elements that vary in their position on the continuum, and signals that are "pure" symbol or sign probably are the exceptions rather than the norm.

Where does this leave us in our effort to define communication? Unfortunately, we have no simple answer. If we define communication to include only signals composed of symbols that are intended to convey information (as do Wiener et al.), we are faced with the problem that in most messages sign and symbol are inextricably intertwined. On the other hand, if we take the position of Watzlawick et al. that *all* behavior performed in the presence of another constitutes communication, we have no principled way of distinguishing between speech and eye blinks. Perhaps a more helpful approach is to ask what communication *does* rather than on what communication *is*. Sperber and Wilson have offered such a definition that avoids some of the problems we have reviewed above. They define communication as:

> …a process involving two information-processing devices. One device modifies the physical environment of the other. As a result, the second device constructs representations similar to the representations already stored in the first device (Sperber & Wilson, 1986, p. 1).

Sperber and Wilson's definition focuses on the central role of internal representations in communication, while leaving open the question of precisely how the representations stored in one device come to be constructed by the second device. One way of thinking about the four models of communication we describe below is that they are different characterizations of this aspect of the process.

2. THE ENCODER/DECODER MODEL

2.1 Introduction

Perhaps the most straightforward conceptualization of communication can be found in what we will call the *Encoder/Decoder* model. A code is a system that maps a set of signals onto a set of significates or meanings.[8] In the simplest kind of code, the mapping is one-to-one: for every signal there is one and only one meaning; for every meaning, there is one and only one signal. Morse code is a familiar example of a simple code. In it the signals are sequences of

short and long pulses (dots and dashes) and the significates are the 26 letters of the English alphabet, the digits 0-9, and certain punctuation marks. In Morse code, the sequence ···· "means" the letter *H*, and only that; conversely, the letter *H* is represented by the sequence ····, and only that sequence.

Encoding/decoding models view communication as a process in which the internal representation is encoded (i.e., transformed into code) by one information processing device (the source) and transmitted over a channel, where it is received by the other information processing device (the destination) and decoded as a representation. Encoding and decoding are the means by which information processing devices affect, and are affected by, the other. The process is illustrated schematically in Figure 1.

Insert Figure 1 About Here

In speech communication, the message passes between people, referred to as speaker (or sender) and addressee (or listener, hearer or receiver).[9] In verbal communication, the source and encoder are contained within the skin of the speaker, and the decoder and destination within the skin of the addressee. In such cases both source and destination are the declarative and procedural memories of the persons functioning as speaker and addressee, and the encoder and decoder are the complex faculties involved in the production and comprehension of speech. In contemporary psycholinguistic theory, the two are often regarded as separate faculties or modules (Fodor, 1983, 1987; Levelt, 1989; Marslen-Wilson & Tyler, 1981). The speaker's mental representation is transformed into a verbal or linguistic representation by means of the speaker's linguistic encoder, and it is the linguistic representation that is transmitted via speech. By decoding the linguistic representation, the addressee is able to create a mental representation that corresponds, at least in some respects, to the mental representation of the speaker.

Of course, the mental representations of speaker and listener may differ in some respects. There are a number of possible sources of such dissimilarity. For example, speaker and addressee may have different understandings of some of the terms in the linguistic

representation. Or the addressee may understand the terms in the linguistic representation correctly, but apply them incorrectly in constructing the mental representation. Or the speaker may omit details from the linguistic representation that are necessary to construct the mental representation, and the addressee may "fill them in" incorrectly. Indeed, it is well established that such "filling in," accomplished by means of schemata, scripts and other pre-existing knowledge structures, is essential to language comprehension and to the recall of information that has been communicated to us (Bartlett, 1932; Bransford & Franks, 1971; Neisser, 1967; Schank & Abelson, 1977).

An Encoder/Decoder model exemplifies the application of principles of information theory (Shannon & Weaver, 1949; Wiener, 1948) to human communication. In information theory the function of the signals transmitted from source to destination is the reduction of uncertainty. To the extent that a message is informative, the destination is less uncertain after receiving the message than before, and information theory provides a means of specifying in quantitative terms the informational content of a message (e.g., the amount of uncertainty it is capable of reducing), at least for messages that meet the theory's requirements. Information theory is the theoretical cornerstone of modern information technology, and as such constitutes one of most important scientific insights of this century.

2.2 Research Findings

Notwithstanding this, apart from some useful general concepts and a set of terms that can be handy when applied loosely, information theory has not contributed importantly to the study of human communication. The aspect of the theory that has had greatest scientific impact is its ability to characterize information in an abstract, quantitative way. And a major impediment in using the theory to describe human communication is that, for a particular message transmitted at a particular time to a particular receiver, more often than not we are at a loss to specify just what uncertainty (if any) has been reduced.[10] In this section we describe several areas of research which are at least tangentially influenced by the Encoder/Decoder model: early studies of the

codability of objects and concepts, research on nonverbal and vocal communication, and recent work on the linguistic bases of causal attribution.

2.2.1 Studies of Codability

The Encoder/Decoder model, and at least the indirect influence of information theory, can be seen in the terminology of early studies of verbal communication. In what was to become a classic study of the role of language in thought, Brown and Lenneberg (1954) observed that a color's *codability* (essentially interpersonal agreement as to what it should be called) predicted how well it would be remembered. Lantz and Stefflre (1964) demonstrated that a color's codability was related to its *communication accuracy*—the accuracy with which subjects could select the color based on a name provided by someone else. Although neither Brown and Lenneberg nor Lantz and Stefflre used this approach, both codability and communication accuracy could readily have been expressed in terms of *H,* the information theoretic measure of uncertainty. Other investigators applied the codability measure to random line drawings (Graham, 1975) and facial expressions of emotion (Frijda, 1961).

Codability, as conceived by Brown and Lenneberg, was a property of a stimulus, but research soon made it clear that what a color was called on a particular occasion of usage (hence, its codability score) was not a simple consequence of its physical properties, and could vary with variety of other factors. These included properties of the colors from which it was to be distinguished (Krauss & Weinheimer, 1967), whether the name was intended for the person who named it or some other person (Innes, 1976; Krauss, Vivekananthan, & Weinheimer, 1968), the purpose that naming the color served (Danks, 1970), and whether naming occurred as part of a monologue or a dialogue (Krauss & Weinheimer, 1967). Such studies demonstrated that the determinants of a color's codability were as much pragmatic (i.e., based on the communicative function the utterance was designed to serve) as they were a function of its physical properties.

2.2.2 Nonverbal Communication

As a result of these and other considerations, studies of verbal communication more often have employed the Encoder/Decoder rhetoric than committed themselves fully to its implications

(Boomer, 1965; Dittmann & Llewellyn, 1967; Glucksberg & Cohen, 1968; Glucksberg, Krauss, & Higgins, 1975; Glucksberg, Krauss, & Weisberg, 1966; Hupet & Chantraine, 1992; Hupet, Seron, & Chantraine, 1991; Krauss & Bricker, 1966; Krauss, Garlock, Bricker, & McMahon, 1977; Krauss & Weinheimer, 1966; Mangold & Pobel, 1989; Mercer, 1976; Rosch, 1977). However, although the Encoder/Decoder model no longer figures importantly in discussions of verbal communication, it probably is the dominant viewpoint of researchers studying nonverbal communication (cf. DePaulo, Rosenthal, Eisenstat, Rogers, & Finkelstein, 1978; Ekman & Friesen, 1969; Lanzetta & Kleck, 1970; Mehrabian & Wiener, 1967; Riseborough, 1981; Woodall & Folger, 1981; Zuckerman, Hall, DeFrank, & Rosenthal, 1976). The approach to defining communication by Wiener et al. (1972) discussed earlier was intended to provide a formal theoretical basis for identifying nonverbal behaviors that are communicative. In it, encoding and decoding are the defining features of communication.

The idea that nonverbal behaviors encode messages (especially messages about the speaker's internal state) probably derives from Darwin's proposal about the origin of facial expressions (Darwin, 1872; Fridlund, in press). Darwin argued that human facial expressions are vestiges of *serviceable associated habits* — behaviors that were functional at one time in our evolutionary history. Baring the teeth when angered originally was a prelude to an aggressive attack in our evolutionary ancestors, and the human facial expression that "encodes" anger is a vestige of that habitual response. According to Darwin's intellectual successors, the behavioral ethologists (e.g., Hinde, 1972; Tinbergen, 1952), over time such responses acquired sign value by providing external evidence of an organism's internal state. The utility of this information for a species generated evolutionary pressure to select these sign behaviors, thereby schematizing them and, in Tinbergen's phrase, "emancipating them" from their original biological functions. Students of nonverbal communication have invested considerable effort investigating such topics as the relationship of nonverbal behavior and internal state (Condon, 1980; Cosmides, 1983; DePaulo, Kirkendol, & Tang, 1988; Edelman & Hampson, 1979; Ekman & Friesen, 1969, 1971; Ekman, Friesen, O'Sullivan, & Scherer, 1980; Fairbanks & Pronovost, 1939; Kimble & Seidel,

1991; Lanzetta & Kleck, 1970; Montepare, Goldstein, & Clausen, 1987; Putnam, Winton, & Krauss, 1982; Strack, Martin, & Stepper, 1988; Streeter, Macdonald, Apple, Krauss, & Galotti, 1983; Williams & Stevens, 1972; Woodall & Folger, 1981; Zuckerman, DePaulo, & Rosenthal, 1981), factors affecting the accuracy with which people can decode nonverbal behaviors (Archer & Akert, 1977; Burns & Beier, 1973; DePaulo et al., 1978; DePaulo et al., 1982; Ekman & Friesen, 1969; Krauss et al., 1981; Lanzetta & Kleck, 1970; Morency & Krauss, 1982; Rimé, 1982; Scherer et al., 1972; Zuckerman et al., 1981), individual differences in the ability to encode or decode nonverbal information (Archer & Akert, 1977; Cunningham, 1977; Morency & Krauss, 1982; Rosenthal & DePaulo, 1979), etc. (For representative reviews and theoretical discussions see DePaulo, 1992; Ekman & Friesen, 1969; Feldman & Rimé, 1991; Hinde, 1972; McDowall, 1978; Patterson, 1976).

2.2.3 Vocal Information in Speech

The Encoder/Decoder perspective has also been applied to studies of vocal information in speech. Although speech is used primarily to convey what might be thought of as *verbal* information (roughly, the information that would be contained in a good transcript), a speaker's voice conveys considerable information about the speaker, quite apart from what he or she says. Collectively this sort of information has been referred to as *vocal* information, and includes both those vocal qualities that are relatively permanent and those qualities that vary with the speaker's internal state. Among the first type are qualities that result from the architecture and condition of the speaker's vocal tract and provide information about the speaker's age, gender and size (Cohen, Crystal, House, & Neuberg, 1980; Gradol & Swann, 1983; Lass & Davis, 1976; Lass & Harvey, 1976; Lass, Hughes, Bowyer, Waters, & Bourne, 1976). Other relatively stable vocal qualities are associated with regional and intra-regional status dialects. It might be said that a speaker's age, gender, and socioeconomic status is encoded in his or her voice, even when speech content is itself uninformative. And people hearing the speech can, without training, do an impressive job of decoding this nonverbal information. For example, Ellis (1967) had undergraduates judge speakers' socioeconomic status after listening to recordings of them

reading a standard passage. The correlation between judged and actual status (as measured by the Index of Status Characteristics) was +0.80; even when the speech samples consisted of counting from 1-10, the correlation between judged and actual status was +0.65. There is abundant evidence that such vocally-encoded information plays an important role in how the speaker is evaluated (Scherer & Giles, 1979).

In addition to these relatively stable voice qualities that permit identification of relatively stable attributes of speakers, variations within-speaker can reflect (among other things) changes in internal state. A speaker's affective state is reflected in vocal quality (Cosmides, 1983; Fairbanks & Pronovost, 1939; Scherer, 1986; Streeter et al., 1983; Williams & Stevens, 1969; Williams & Stevens, 1972), and perceivers can identify these states with reasonable accuracy (Burns & Beier, 1973; Ekman et al., 1980; Krauss et al., 1981; Scherer et al., 1972).

2.2.4 Interpersonal Verbs and Implicit Causality

Some of the most sophisticated applications of an Encoder/Decoder model can be found in research on the influence of linguistic form on social inference, particularly with regard to the attribution of causality. In a sentence of the form *"A verbed B,"* in which *A* and *B* are people, and *verb* denotes an interpersonal action or state, the cause of the action logically could be either the grammatical subject *(A)* or the grammatical object *(B)* . If *A praises B,* the reason might be that *A* is an enthusiastic and supportive person or that *B* had done something especially praiseworthy; *A* might *dislike B* because *A* is a misanthrope, or because *B* behaves in an obnoxious fashion.

Although interpersonal verbs are neutral with respect to explicit cause, it's been known for some time that they differ considerably in the extent to which causal agency tends to be attributed to their subjects or objects (Caramazza, Grober, Garvey, & Yates, 1977; Garvey & Caramazza, 1974) . Roger Brown and his associates (Brown, 1986; Brown & Fish, 1983; Brown & Van Kleeck, 1989; Van Kleeck, Hilger, & Brown, 1988) has distinguished between verbs denoting interpersonal *actions* and verbs denoting interpersonal *experiences.* For *interpersonal action* (IA) *verbs* (e.g., *defend, cheat, call),* the person who performs the action is the

grammatical subject and the recipient of the action is the grammatical object. Brown et al. further distinguished between two types of verbs denoting interpersonal experiences: *stimulus-experiencer* (S-E) *verbs* (e.g., *amuse, disgust),* in which the stimulus is the grammatical subject and the person having the experience is the grammatical object; and *experiencer-stimulus* (E-S) *verbs* (e.g., *ignore, admire),* in which the stimulus is the grammatical object and the person having the experience is the grammatical subject.[11] For IA verbs, the performer of the action tends to be seen as its cause. Subjects reading the sentence *"A cheats B"* are likely to regard *A* as responsible for the cheating . But for interpersonal verbs denoting experiences, the stimulus person rather than the experiencer is seen as the causal agent. Since for S-E verbs the stimulus is the grammatical subject, in the sentence *"A disgusts B" A* is perceived as causal. However, for E-S verb the grammatical object is the stimulus; hence, in the sentence *"A admires B," B* tends to be seen as the cause.

Implicit causality appears to be a reasonably reliable phenomenon, but there is little agreement about the factors responsible for it. Among the several possibilities that researchers have considered are: morphological differences in the kinds of adjectives that can be derived from different interpersonal verbs (Brown & Fish, 1983; Hoffman & Tchir, 1990; Van Kleeck, et al., 1988) , schema activation (Brown & Fish, 1983) , differential salience (Kasof & Lee, 1993) , variations in the implicit context (Semin & Fiedler, 1989; 1991; 1992) , the perceived volitional control of *A* and *B* (Gilovich & Regan, 1986) , and the accessibility of the subject or object in the comprehender's discourse model (McKoon, Greene, & Ratcliff, 1993) .

Implicit causality also varies in interesting ways with other social variables. For example, an IA verb's valence affects who will be perceived as its cause (Franco & Arcuri, 1990; LaFrance & Hahn, 1991) ; generally speaking, the actor is more likely to be seen as the cause of negative actions (e.g., *scold, slap).* than of positive actions (e.g., *praise, kiss).* The gender of *A* and *B* also affects who will be seen as the causal agent. LaFrance and Hahn (1991) , using a technique developed by Semin and Fiedler (1991) , gave subjects sentences like *"A insulted B"* and asked them to provide the sentence that preceded it (e.g., *"B* contradicted *A," "A* disliked *B,"*

etc.). The variable of interest was whether *A* or *B* was seen as the cause in the preceding sentence, which forms the implicit context for understanding the target sentence. LaFrance and Hahn systematically varied the gender of the names in the *A* and *B* slots. When *A* was a male, *B*'s gender did not affect perceived causality. However, a female *A* was much more likely to be perceived as the cause when *B* was a female than when *B* was a male, suggesting that females tend not to be seen as causal agents of actions affecting males.

Among the most interesting and productive applications of implicit causality has been to the area of group stereotypes. Using Semin and Fiedler's linguistic category model (Semin & Fiedler, 1989; 1991; 1992) , Maass, Salvi, Arcuri, and Semin (1989) have shown an important asymmetry in the implicational value of the words group members use to describe the behavior of in-group and out-group members. As one moves from DAVs to IAVs to SVs in the Semin and Fiedler category system, one moves from depictions of specific behavioral episodes to depictions of abstract states or predispositions. Any particular behavioral episode can be characterized in a variety of ways at different levels of abstraction: *"A punches B,"* or *"A hurts B,"* or *"A dislikes B."* The most abstract way to characterize a behavior would be as evidence of a predisposition: *"A is aggressive."* Maass et al. found that negatively valent behaviors of out-group members tend to be characterized at relatively high levels of abstraction, and those of in-group members are characterized more concretely, but for positively valent behaviors the pattern is reversed. Positively valent behaviors of out-group members are characterized as specific episodes, while those of in-group members are characterized abstractly. Maass et al. call this the "linguistic intergroup bias" (see also Hamilton, Gibbons, Stroessner, & Sherman, 1992; Maass & Arcuri, 1992) . One consequence of the linguistic intergroup bias is to help make stereotypes resistant to disconfirmation, since behaviors that are congruent with the negative out-group stereotype will tend to be characterized as general properties *("Smith is lazy")*, while behaviors that are inconsistent with the stereotype will tend to be characterized in quite specific terms *("Smith painted his house").*

Although examining the causal implications of language has yielded fascinating results, there are reasons to be cautious about generalizing these findings to language use. Edwards and Potter (1993) have pointed out that simple, out of context subject-verb-object sentences of the kind typically used in studies of implicit causality are rarely encountered in discourse. Consequently, the judgments subjects make from them may have little to do with the way language normally is processed in communication. Seen in isolation, *"Alan desires Jane"* may be understood as consequence of Jane's desirability, but in the context of a narrative that depicts Alan as a compulsive womanizer, his desire for Jane may be attributed less as to her desirability than it is to his proclivity.

Is implicit causality really a matter of encoding and decoding? Or, to put it another way, is an interpersonal verb's causal implications part of its linguistic meaning, or is it an inference an addressee will draw in a particular context of usage about what the speaker intended? Semin and Marsman (in press) argue that interpersonal verbs invite inferences about a variety of properties (e.g., the perceived temporal duration of the action or state, how enduring a quality they imply, affective consistency, etc.), causal agency being only one of them. Researchers have assumed that interpersonal verbs automatically trigger inferences about causal agency, but Semin and Marsman suggest that such inferences are themselves a consequence of contextual factors (e.g., the question the subject is asked). Much of the work on implicit causality has approached the phenomenon in linguistic terms, but it may be more readily understood as part of the addressee's attempt to infer an intended meaning. The general question of how addressee's extract intended meanings from messages is discussed in Section 3.

2.3 Issues and Limitations

Two features of the Encoder/Decoder model should be highlighted. One is implicit in the very notion of a code, and is illustrated in the early color codability studies. It is that the meaning of a message is fully specified by its elements—i.e., that meaning is encoded, and that decoding the message is equivalent to specifying its meaning. The other feature is that communication consists of two autonomous processes—encoding and decoding. We have tried

to illustrate the Encoder/Decoder schematically in Figure 1. Despite the fact that language can in certain respects be regarded as a code, and the fact that both encoding and encoding processes are involved in communication, encoding and decoding do not adequately describe what occurs in communication, as will be discussed in the next three sections. Here we will just briefly point to some areas where the approach falls short.

In the first place, it is often the case that the same message can (correctly) be understood to mean different things in different circumstances. For example, some messages are understood to mean something other than their literal meaning. While there is not universal agreement on the value of the literal vs. nonliteral distinction (Dascal, 1989; Gibbs, 1982, 1984; Katz, 1981; Keysar, 1989; Searle, 1978), it is abundantly clear that the most commonplace utterance (e.g., "You're leaving") can be understood differently in different contexts (e.g., as an observation of a state of affairs, as a prediction of a future state of affairs, etc.). Without making the relevant context part of the code, a model that conceptualizes communication as simply encoding and decoding will have difficulty explaining how the same message can be understood to mean different things at different times. Moreover, even when context is held constant, the same message can mean different things to different addressees. And there is considerable evidence to indicate that speakers design messages with their eventual destinations in mind (Bell, 1980; Clark & Murphy, 1982; Fussell & Krauss, 1989a; Graumann, 1989; Krauss & Fussell, 1991).

Similarly, there is growing evidence that nonverbal behaviors are not simply signs that encode internal state in a straightforward way. A facial expression may be related to a person's internal state, but comprehending its significance can require considerably more than simply identifying the expression as a smile, a frown, an expression of disgust, etc. For example, smiles are understood to encode a affectively positive internal state, but they hardly do this in a reflexive fashion. In a series of ingenious field experiments, Kraut (1979) found smiling to be far more dependent on whether or not the individual was interacting with another person than it was on the affective quality of the precipitating event, and Fridlund (1991) has shown that even for people who were alone, the belief that another person was engaged in the same task (albeit in

another room) was sufficient to potentiate smiling. In dyadic conversations, the facial expressions of the listener (i.e., the person not holding the conversational floor at a given moment) may change rapidly. Some of these changes (e.g., smiles) may represent back-channel signals (Brunner, 1979; Chen, 1990), while others (e.g., wincing at the other's pain) may serve to signal the listener's concern (Bavelas, Black, Chovil, Lemery, & Mullet, 1988; Bavelas, Black, Lemery, & Mullet, 1986).

Even aspects of voice quality cannot be straightforwardly interpreted. For example, a speaker's vocal pitch range is a consequence of the architecture of the vocal tract. However, social factors can influence how a given speaker places his or her voice within that range. Men seem to place their voices in the lower part of their vocal range, and women do not, which, incidentally helps explain why a man's size can more accurately be predicted from his voice than a woman's (Gradol & Swann, 1983). In addition, a speaker's pitch and amplitude will be influenced by the pitch and amplitude of the conversational partner (Gregory, 1986, 1990; Lieberman, 1967; Natale, 1975). In a similar fashion, a speaker's internal state can induce changes in voice quality, but the relationship is hardly one-to-one. For example, stress profoundly affects voice fundamental frequency, but in any specific instance the effect can vary considerably depending on the conversational partner (Streeter et al., 1983). So, while encoding and decoding may characterize the role of nonverbal behavior is some communication situations, the applicability of the model is far from universal.

3. INTENTIONALIST MODELS

3.1 Introduction

For encoding/decoding models, meaning is a property of messages. An alternative view is that successful communication entails the exchange of *communicative intentions,*[12] and that messages are simply the vehicle by which such exchanges are accomplished. We will refer to models organized around this assumption as *Intentionalist* models. From this point of view, intentions are not mapped onto word strings in a one-to-one fashion; rather, from among a variety of potential alternative formulations, speakers select the one that expresses a particular

intention most felicitously. Decoding the literal meaning of a message by the hearer is only a step in the process of comprehension. A further process of inference is required to derive the communicative intention that underlies it. For Intentionalist models, the social construction of meaning is made possible by the inferential rules speakers employ to formulate utterances that convey their communicative intentions, and listeners use to identify those intentions. To the extent that the speaker's intentions are understood correctly, meaning is socially shared.

Intentionalist models derive from two sets of ideas that had their origins in ordinary language philosophy: Grice's cooperative principle and Searle's theory of speech acts. In this section we briefly review the central points of these two theoretical stances, and then discussion the notion of context in Intentionalist models.

3.1.1 Intentionality in Discourse

Earlier (Section 1.2) we distinguished between symbols and signs as constituents of messages. One of the features that distinguishes symbols from signs is that the former are used intentionally. Grice (1957; 1969) has argued that such intentionality is intrinsic to understanding messages function communicatively. According to Grice, a message can be considered intentional if and only if (a) the speaker intended the message to create an effect (i.e., a belief) in the listener; and (b) the speaker intended that effect to result from the listeners' recognition of that intention.

Central to the Intentionalist position is the idea that words and their intended effects on the listener do not bear a fixed relationship. A phrase like "I love social psychology," used sincerely, will be understood to mean one thing, and the same words, used ironically, will be understood to mean something quite different. The assumption about the relation of words and meanings is reflected in the distinction between *sentence-meaning* (i.e., the literal meaning of a word or phrase) and *speaker-meaning* (i.e., the meaning the communicator intends to convey by using that sentence meaning). Although the sentence-meanings of the sincere and ironic utterances in the example were identical, their speaker-meanings are not. Most pragmatic models of communication, including Grice's, assume that speaker meaning is identified *by way*

of sentence meaning. That is, although the two types of meanings are distinct, sentence meaning forms the basis for determining speaker meaning. Sentence meaning is evaluated in light of the context of conversation, and used to draw inferences about the intended meaning.

Grice's Conversational Maxims

If speaker meaning is not identical to sentence meaning, how do speakers go about formulating utterances that will be understood correctly, and how do addressees identify an utterance's intended meaning? Grice (1975) proposed that we view conversation as a cooperative endeavor. Even when their purpose is to dispute, criticize, or insult, communicators must shape their messages to be meaningful to their addressees. To do so, Grice proposed, they follow a general *Cooperative Principle*, comprised of four basic rules, which he termed *Conversational Maxims* (see Table 1): messages should be consistent with the maxims of *quality* (be truthful), *quantity* (contain neither more nor less information than is required); (c) *relation* (be relevant to the ongoing discussion);[13] and (d) *manner* (be brief, unambiguous, etc.).

Insert Table 1 About Here

Of course, many utterances appear to violate one or more of the maxims. Consider irony. The person who says "I love social psychology," meaning "I hate social psychology," appears to have violated the maxim of quality. Likewise, extreme overpoliteness (e.g., "If it wouldn't be a great inconvenience, would you mind terribly much if I asked you to get off my toe?") is an apparent violation of the maxim of quantity. Perhaps even more common are ostensible violations of relevance, as in this question-response sequence adapted from Levinson (1983, p. 102), in which the response bears no obvious relationship to the question:

A: Do you know where Bill is?

B: There's a red Honda Accord outside Jane's house

Grice argued that even in the face of such apparent violations, communicators typically assume that the cooperative principle holds, and seek to interpret the message in a way that resolves the apparent violation.[14] For example, A may reason that B knows (or believes) that Bill has a red

Honda, and, hence, that the intended meaning of the utterance is that Bill is at Jane's house. By drawing upon Grice's conversational maxims, A can infer B's communicative intention.

3.1.2 Speech Act Theory

A second line of thought that has influenced Intentionalist models of communication stems from work in the philosophy of language on speech act theory (Austin, 1962; Searle, 1969, 1979). As was noted earlier, a communicative act can be thought of as a behavior intended to accomplish some particular end. In his felicitously titled book, *How to do Things with Words,* Austin (1962) observed that many utterances can be described as *acts* on a speaker's part: questions, promises, demands, etc. Indeed, any utterance can be viewed as made up of three rather different types of acts: a *locutionary act* (the act of uttering a specific sentence with a specific conventional meaning), an *illocutionary act* (the act of demanding, promising, etc. through the use of a specific locution), and a *perlocutionary act* (an attempt to achieve some sort of verbal or behavioral response from the addressee).[15] By saying, "Please hand me the corkscrew," a speaker is producing a particular sentence (a locutionary act), making a request (an illocutionary act), and trying to induce the address to pass the corkscrew (a perlocutionary act). Although all three types of acts are of interest in interpersonal communication, theoretical development and experimental research has tended to focus on illocutionary acts.

Direct and indirect speech acts

Each sentence form has an associated *literal force*, or conventional illocutionary meaning, but the intended meaning of an utterance may differ from its literal force. Consider, for instance, the various ways of requesting that a door be shut listed in Table 2. Each can serve as a request to shut the door, despite the fact that except for "close the door" their sentence forms are not requests, but assertions and questions. This apparent anomaly has been resolved in speech act theory by positing a distinction between the literal force of a sentence type and its indirect force. Thus, while the utterance "Did you forget the door?" carries the literal force of a question, in the appropriate circumstances it can have the indirect force of a request. In Searle's terms, it is an *indirect speech act*. According to Searle (1975), to understand indirect speech

acts, listeners draw upon their knowledge of speech acts, Gricean principles of cooperative conversation, and the context of the conversation.

Insert Table 2 About Here

3.1.3 The Role of Context in Intentionalist Models

Although the notion of context plays a central role in both Grice's and Searle's pragmatic analyses of meaning, as Levinson (1983) has observed it has proven problematic to define in a principled way. Lyons (1977) includes as part of the context (a) communicators' roles in the conversation (speaker, addressee), their social roles (e.g., doctor, patient), and their social status; (b) the time and place of the interaction; (c) the formality of the situation, (d) the appropriate style of speech (e.g., literary, casual); (e) the conversational topic; and (f) the situational domain (e.g., home, work). Certainly not all of the circumstances that surround a particular act of speaking will enter into its interpretation, but distinguishing between the elements that do and those that do not is far from straightforward.

Most Intentionalist models assume that it is communicators' beliefs about each of these factors, rather than the actual state of affairs, that guides their use of language. Both Grice and Searle incorporate into their theories the notion that the relevant context for interpreting utterances is the interlocutors' *common ground* or *mutual knowledge* -- the knowledge, beliefs etc. shared by the speaker and hearer, and known to be shared by them (Clark & Marshall, 1981; Lewis, 1969; Schiffer, 1972). Mutual knowledge is discussed in Section 4.1.

3.2 Research Findings

Intentionalist models are in principle models of production *and* interpretation. Indeed, as Hilton (in press) observes, Grice's Maxims were framed as imperatives for the speaker: be brief, orderly, relevant, and truthful. In practice, however, most research from this perspective has focused on comprehension, and virtually no experimental work has studied how speakers draw upon their knowledge of the cooperative principle and speech acts when they formulate messages.

We will examine three bodies of research that reflect an Intentionalist perspective: (a) psycholinguistic research on the comprehension of indirect speech acts; (b) research on the role of social psychological variables such as politeness strategies, interpersonal relationships, and self-serving biases in intentionalist models of language production and comprehension; and (c) studies of how the cooperative principle and its maxims affect subjects' interpretations of materials and responses in experiments and surveys.

3.2.1 Comprehending Indirect Speech Acts

Psycholinguistic models of speech act theory have assumed that the comprehension of indirect illocutionary meaning requires three stages of cognitive processing (hence the term "three-stage models"). First, literal sentence meaning is determined; then, the appropriateness of this literal meaning is assessed in light of conversational principles and the context; finally, the intended meaning is identified on the basis of the literal meaning and conversational principles. It should follow from this model that: (a) it takes longer to process indirect speech acts than direct ones; (b) both the direct and indirect force of utterances play a role in comprehension, and (c) to the extent that the social and linguistic context helps reduce the set of potential indirect meanings, comprehension of indirect speech acts is facilitated . Empirical support for these predictions has been mixed.

Stages in comprehension.

The three-stage model has been tested on several types of indirect speech acts, including indirect requests and figurative language. Clark and Lucy (1975) found some support for the three stage model with respect to indirect requests, but their results have not been replicated consistently, and other investigators have reported contradictory findings (see Gibbs, 1982; 1984; 1994a, 1994b, for reviews). Gibbs (1983) found that some indirect request forms were idiomatic, and required no more processing time than comparable literal statements (see also Holtgraves, 1994).

The adequacy of three-stage models for explaining figurative language comprehension also has been called into question. A substantial body of research has been accumulated on this

topic, and we will only consider a few of the findings that are pertinent to evaluating stage models (see Cacciari & Glucksberg, 1994 and Gibbs, 1994a, 1994b for reviews of this literature). Reaction-time studies do not find uniformly that metaphors take longer to process than comparable literal statements (see Gibbs, 1994b; Cacciari & Glucksberg, 1994). Furthermore, hearers have difficulty *preventing* themselves from processing the figurative meaning of metaphorical expressions, even when the literal meanings are the ones that are relevant to the task (Glucksberg, Gildea, & Bookin, 1982). Finally, some types of figurative language (e.g., such familiar idioms as "kick the bucket") may never be processed literally, but instead seem to be listed in the mental lexicon as single lexical entries. In short, the evidence to date has not supported the three-stage theory over other models. It is, of course, possible that literal sentence meaning plays a role in comprehension of nonliteral language, quite apart from its temporal priority.

The role of direct and indirect meanings.

A second, less direct, prediction of three-stage models concerns interpretations of indirect meaning. If a hearer calculates the indirect meaning of a speech act, this indirect meaning should be reflected in the response to the message. To examine this hypothesis, Clark (1979) had a confederate call restaurants and ask either "Do you accept American Express cards?" or "Do you accept credit cards?" He reasoned that although the first question is interpretable as a direct question, the second carries an additional illocutionary force -- a request for information as to what cards are accepted. In line with his predictions, all respondents in the first condition simply said "yes," while more than half of those in the second condition added further information about the particular credit cards that were acceptable. Clark further argued that as the relevance of the literal meaning of an utterance declines, so does the likelihood that the addressee will incorporate it in the response to the indirect speech act. Consistent with this hypothesis, he found that when bank clerks were asked "Can you tell me what the interest rate is?" only 16% said "yes" before providing the rate; restaurateurs as "Do you accept credit cards?" all answered "yes" before they added the names of the cards they accepted..

The role of context in identifying indirect meaning

In the studies described above, the relationship between direct and indirect meaning typically was based on convention, and listeners may have been able to identify the speaker's intended meaning with little contextual support. Other research in the Intentionalist perspective has focused upon such forms of indirect speech as demonstrative reference, that are difficult if not impossible to comprehend outside of the conversational context. For example, one might point to an income tax return *(demonstratum)* and say, "I hate those people." The addressee's task is to infer the relationship between the demonstratum and the intended referent using the speaker's utterance as a guide (Clark, Schreuder, & Buttrick, 1983; Nunberg, 1979).

Clark et al. (1983) examined the claim that demonstrative references, like indirect speech acts, are understood by evaluating the literal meaning of the expression in conjunction with the context of communication -- specifically, the speaker and addressee's mutual knowledge -- in a series of studies. In one, subjects were shown color photos of four types of flowers, and asked "How would you describe the color of this flower?" In one condition, daffodils were clearly more prominent than the other flowers, whereas in the other condition they were only slightly more prominent. When the salience of the daffodils was low (and hence the referent of "flowers" could not easily be identified), subjects tended to ask, "which one?" However, when the salience of the daffodils was high, more than half responded with respect to the daffodils without asking for further clarification. According to Clark et al., the daffodils' high salience allowed addressees to infer that it was part of common ground, and that speakers intended them to use this salience in identifying the referent of "the flower." In contrast, when salience was low, the referent of "the flower" was obscure.

In another study, Clark et al. (1983) showed subjects a picture of then-President Ronald Reagan with David Stockman (then director of the Office Management and Budget), and asked one of two questions: "You know who this man is, don't you?" or "Do you have any idea at all who this man is?" The two questions were designed to induce different perceptions of the speaker's assumptions about the addressee. In the first case, the question presumes that the

identity of "this man" is known by the addressee, while the second presumes that "this man" is not known. In addition, addressees assume that the speaker *intends* for them to use these presumptions in determining what is meant. The results were consistent with this line of reasoning: with the first question, 80% selected Ronald Reagan as the referent, while with the second question, none did.

Another kind of indirect meaning is found in speakers' use of existing words to create novel ones. Some common examples are denominal verbs (e.g., "tunnel the mountain, "wait-list the passenger," Clark & Clark, 1979), eponymous expressions (e.g., "do a Nixon to the tapes," Clark & Gerrig, 1983), and novel compounds (e.g., "apple juice chair," Downing, 1977). Such novel words and expressions cannot have literal meanings, and their use constitutes an apparent violation of the cooperative principle. However, listeners usually are able to discern the speaker's intentions without difficulty (e.g., Clark & Gerrig, 1983).

Summary and conclusions

The research we have reviewed indicates that people take the intended meaning of utterances into account, and that they determine this indirect meaning by using the surface form of the message, the context, and the mutual knowledge shared between speaker and hearer. In these studies such social psychological dimensions as the relationship between speaker and listener have been given little consideration. The extent to which these and other social psychological factors play a role in the identification of speakers' intentions is examined in the next section.

3.2.2 Social Psychological Factors in Intentionalist Models

Social psychologists have long been aware of the impact of social factors on language comprehension. Nearly 50 years ago, Solomon Asch (1946) demonstrated that the same message, attributed to different sources (Vladimir Lenin or Thomas Jefferson), would be interpreted quite differently. Although little research from the Intentionalist perspective has pursued the implications of Asch's insight, several investigators have examined how such social factors as the communicators' relative statuses influence the identification of speakers' intentions.

This section reviews research on the effects of several social factors on the interpretation of indirect speech acts, and how the type of speech act affects perceptions of the relationship of the communicators.

Politeness

Because complying with requests for help or information can impose a cost on others, making requests may require subtle social negotiation. Politeness forms play a role in this process. As illustrated in Table 2, there are a number of alternative forms a speaker can choose from in making a request. Brown and Levinson's (1987; see also R. Lakoff, 1973, 1977) contend that these alternatives differ in the extent to which they threaten the "face" of the recipient, in their potential to make the addressee feel bad about him- or herself, the task, the speaker and/or their relationship. They achieve this effect by varying the degree to which the sentence form of the utterance imposes upon, and offers alternatives to, the addressee. A direct request such as "Shut the door" leaves the addressee with no options whereas "Would you mind closing the door?" at least preserves the illusion that the addressee might say refuse.

There is abundant evidence that the literal sentence form of an indirect request can affect its perceived politeness. Indirect requests that make it easy for the addressee to decline are judged to be more polite (e.g., Clark and Schunk, 1980; Francik & Clark, 1985; Gibbs, 1986; Holtgraves & Yang, 1990).[16] However, this general rule is dependent on other factors, among them the size of the request (i.e., the burden complying imposes on the requestee). According to Brown and Levinson, when making small requests or requesting things that the requester is entitled to request, the use of excessively polite forms may be seen as sarcastic (e.g., "I wonder if I might interrupt your reverie, Nurse Grimble, to ask you to hand me a hemostat so I can complete the surgery before the patient expires?"). Consistent with this analysis, Holtgraves and Yang (1990, Experiment 1) found that subjects judged direct requests more likely to be used for small requests than for large ones.

Relative status and social distance

In addition to the size of a request, several dimensions of the social relationship between speaker and addressee can also influence perceived politeness. As Slugoski and Turnbull (1988) point out, the indirect request "I hate to bother you, but would you mind very much passing me the salt" might be seen as polite when addressed to a stranger at a formal dinner gathering, but sarcastic when said to a member of one's immediate family. Brown and Levinson's model includes two social factors (in addition to request size) as additive determinants of indirectness: the relative power of the hearer over the speaker, and the social distance between them. According to what might be called the Brown-Levinson Law:

Indirectness = Request Size + Power (of hearer over speaker) + Social Distance

The law predicts that as any of these factors increases, requests will become increasingly indirect and thus less face-threatening.

Several investigators have attempted to test the law formula empirically. Holtgraves and Yang (1990, Experiment 2) used a set of vignettes to manipulate the communicators' social distance, the power of the addressee relative to the speaker, and the politeness of the request. When participants were of equal power, direct (hence face-threatening) request forms were judged both more likely and more polite when the interactants had a close, as opposed to distant, relationship. Relative power influenced perceptions of politeness, but only when the relationship was distant. On the whole, Holtgraves and Yang's results support the view that social relationship factors can influence perceptions of speech acts, although they also suggest that Brown and Levinson's additive model may need refinement.

The preservation of face is a factor in a number of other speech acts, including negative assertions. It sometimes is necessary to provide an addressee with negative feedback or evaluations, and in such situations speakers may be concerned that their response will threaten their addressee's face (Brown & Levinson, 1987). A professor, asked by a failing student how well he or she has done on the final exam, might opt to respond indirectly (e.g., "You must have been very busy with your other courses this semester"). As with indirect requests, social

relationship factors can influence how negative information is presented. Relative status, in particular, may affect the decision to speak indirectly rather than directly, as well as the form the indirect speech act takes, in part because social norms specify that lower-status individuals be more concerned with saving the face of higher-status individuals than vice versa (Holtgraves, 1986).

To examine these issues, Holtgraves (1986, Experiment 1) provided subjects with a series of vignettes in which a high or a low status participant initiated a conversation about something that had turned out poorly. The vignettes manipulated several factors, including (a) who was responsible for the negative outcome (the high status individual, the lower status individual, or a third party who was not present), and (b) the type of response elicited by a question about the item or event's success (e.g., direct negative response, indirect response, or a switch of topic). Holtgraves found that when the addressee's face was threatened, evasive responses were judged more polite, and more likely to be made in everyday conversation, than direct responses. In contrast, when the addressee's face was not at risk (i.e., when the third party was responsible for the failure), direct responses were judged to be equally polite and more likely than indirect responses. The effects of the status manipulation, while in accord with predictions, were not statistically significant.

Communicators' affective relationships

The Brown-Levinson model is primarily concerned with the way speakers' utterances are designed to maintain the face of their coparticipants. But as Slugoski and Turnbull (1988) point out, it is sometimes the case that a speaker intends an utterance to be insulting, critical or scornful The focus on face-saving rather than face-threatening behavior, they suggest, is due to Brown and Levinson's emphasis on interpersonal relationships that are either affectively positive or neutral. To the degree that people like each other, we might expect them be more concerned with face-saving and, hence, more polite. However, interactants who dislike each another are likely to have little concern with others' face maintenance, and indeed may intentionally threaten it.

Slugoski and Turnbull examined the role of liking and social distance on the perception of speakers' intentions using vignettes in which these two factors were varied orthogonally. Each vignette ended with a remark that was literally either a compliment or an insult. Subjects first indicated what they thought the speaker meant by the utterance, and then rated how insulting or complimentary the remark was, how well the two participants knew each other, and how much they liked each other. Interestingly, social distance did not affect the interpretation of insults; however, the affective tone of the relationship strongly influenced the literalness of the interpretation: Literal insults were more likely to be taken nonliterally when the addressee was liked, while literal compliments were judged more likely to be intended nonliterally when the addressee was disliked. Slugoski and Turnbull propose that the affective relationship of speaker and hearer be added to the Brown-Levinson model; however, as they note, it is not clear that affect has a linear relationship to indirectness. For instance, some of the most face-threatening remarks are made within the context of family arguments. Furthermore, as Goffman (1967) observed, people generally try to avoid threatening others' face regardless of their liking for one another.

Inferring relationships from speech acts

Slugoski and Turnbull (1988) have pointed to an interesting property of the Brown and Levinson's model. Because the relationship of the variable is additive, addressees (and others) who know the value of any three variables in the equation can assess the level of the fourth. For example, given an utterance of a given level of politeness, and knowledge of the request size and social distance between communicators, the speaker's assumptions about his or her status vis-à-vis the addressee can be calculated. If one professor tells another "Take my place at today's meeting," the request not only seems impolite, but also indicates that the speaker feels superior in status and power to the addressee. In contrast, the same request phrased as "Would you mind terribly much taking my place at today's meeting?" implies that the addressee is of equal or greater status. Several studies have addressed the impact of message form on perceptions of such social relationship factors as relative status, liking, and social distance.

Using a series of vignettes that manipulated the threat to face posed by the interaction, Holtgraves (1986, Experiment 2) examined how response type (direct, indirect, irrelevant) affected perceptions of the respondent's status, the questioner's and respondents' liking of one another, and the closeness of the relationship. Perceived status, social distance, and liking were influenced by the type of speech act used to respond. For example, in face-threatening scenarios, direct responses led to inferences of higher relative status for the respondent, and to perceptions of greater liking and closeness in the relationship than did indirect replies. In a related study, Holtgraves and Yang (1990, Experiment 3) found for both American and Korean subjects that the perceived status of the speaker relative to the addressee increase as the politeness of request form declined.

In their study of the effects of a relationship's affective tone and social distance on speech act comprehension, Slugoski and Turnbull (1988) also examined inferences about social relationships. They found that the literal meaning of compliments and insults did not affect perceptions of social distance, although a small but significant positive relationship was found between literal compliments and perceived liking. Because of some technical problems in the study's design, these findings must be regarded as tentative, research is needed to address these issues in a more rigorous way.

Summary and conclusions

It is clear that social dimensions of the conversational context can influence the interpretation of speech acts, including requests, negative assertions, and compliments. However, the available evidence suggests that the Brown and Levinson model needs revision. A general problem may be that models have been formulated too broadly. Holtgraves (1994) results indicate that the relationship between speaker status and the interpretation of indirect requests is mediated by a number of variables, perhaps chief among them the conventionality of the request form used.

Methodological considerations further complicate interpretation of the results of many of these studies. For example, researchers appear not to have considered the implications of their

research on inferred relationships for message comprehension. In the next section, we turn to studies that directly address the effects of conversational rules on subjects' understanding of experimental materials.

3.2.3 Inferring Intentions in Research

An extensive program of research by Denis Hilton, Norbert Schwarz, Fritz Strack, and their colleagues has examined the role of inferred intentions in experimental and survey research.[17] The fundamental premise underlying this work is that interactions between experimenter and subject, or survey researcher and respondent, can be conceived as conversations, albeit often one-sided ones, to which Grice's maxims apply. A failure on the part of investigators to appreciate the conversational nature of their studies can result in serious misinterpretations of their subjects' responses.

Such tasks as understanding experimental instructions or determining what a survey question means require language comprehension, and, as is the case in conversational contexts, comprehension entails inferring the experimenter's communicative intentions. Problems arise when experimenters violate conversational maxims, and clarifying information is rarely provided. As Schwarz et al. (1991, p. 69) observe,

> Experimenters as social communicators often introduce information that is neither informative nor relevant. However, subjects have no reason to doubt the relevance of information provided to them in a serious research setting and are likely to assume that the utterance reflects a particular "communicative intention"…on the part of the experimenter.

Research has addressed how violations of Grice's Maxims of quality, quantity, relation, and manner can result in what have been viewed as judgment errors in a variety of domains. Other studies examine how features of questionnaires influence interpretations of specific questions.

Pragmatic effects on judgment errors

A number of studies have examined how principles of conversation may play a role in what are traditionally considered to be errors in reasoning on the part of experimental subjects.

Here we will focus on how Intentionalist models have been applied to three reasoning and judgment phenomena: the base-rate fallacy, the conjunction error, and the fundamental attribution error.

The base-rate fallacy. In their classic demonstration of the misuse of base-rate information, Kahneman and Tversky (1973) gave subjects personality profiles they described as sampled from a population containing either 30% engineers and 70% lawyers or 70% engineers and 30% lawyers, and asked them to estimate the likelihood that the person was an engineer. Subjects based their judgments on individuating personality information in the profile, without taking into account the *a priori* probability that a randomly sampled individual was an engineer or a lawyer. Kahneman and Tversky interpreted their findings in terms of the *representativeness heuristic:* subjects based their judgments on how closely the described individual matched their perceptions of the personalities of engineers and lawyers.

Schwarz and his colleagues (Schwarz et al., 1991b) point out that the wording of the instructions may have led subjects to infer that the experimenter, by focusing on the fact that the information used in the descriptions was gathered by psychologists, based on interviews and personality tests, *intended* them to use the personality information in making their judgments . They found Schwarz et al., 1991b, Experiment 1) that when the perceived relevance of the personality information was reduced (by stating that the sketches had been produced by a computer) the bias effect was greatly reduced. Similarly, Ginossar and Trope (1987) manipulated the credibility of the source of the personality information (trained psychologist, beginning interviewer, palm reader), and found that deviation from the base-rate increased with source credibility. Although Ginossar and Trope did not interpret their results in conversational terms, Hilton (in press) argues that subjects considered the credibility of the source in assessing the extent to which the maxim of quality was upheld, and discounted personality descriptions from less credible sources.

Ordering conventions in language also can affect use of base-rate information. Clark and Haviland (Clark & Haviland, 1977; Haviland & Clark, 1974) have proposed that communicators

construct their messages so that information that is already known is provided prior to new information. This idea, termed the *given-new contract*, suggests that when two items of information are presented in a message, the first item is regarded as part of what is "given" for the interpretation of the second. The maxims of quantity, quality, and relation suggest that this "new" information must be important to the overall message; otherwise it should not be presented at all. Krosnick, Li, & Lehman (1990) contend that these conversational rules serve to heighten the perceived importance of the second piece of information. To examine this possibility, they carried out a series of studies in which order of base rate and individuating information was manipulated. Consistent with their analysis, they found that when the base-rate information was presented *after* the individuating information, subjects weighted this information more heavily in their judgments.

The conjunction fallacy. Another well-known cognitive bias, the conjunction fallacy (Tversky & Kahneman, 1983), has also been reexamined in Gricean terms. The conjunction fallacy involves a violation of the logical rule that if B is a proper subset of A, the number of elements in B cannot be greater than the number in A. In Tversky and Kahneman's study, subjects read brief biographical sketches of target individuals, and then assessed the likelihood of statements about the targets. The set of statements always contained one category membership option (e.g., "Linda is a bank teller") and one category subset option (e.g., "Linda is a bank teller and is active in the feminist movement") which provided a better match to the personality description. Overwhelmingly, subjects rated the latter proposition as more likely than the former, disregarding the logical principle that the likelihood of being in a subset can be no greater than the likelihood of being in the superordinate category.

Tversky and Kahneman attributed their subjects' judgments to their use of the representativeness heuristic, but several investigators from an Intentionalist perspective (e.g., Hilton, in press; Schwarz, 1994) have noted that pragmatic constraints may have influenced the findings, and that people's reasoning abilities may not be as poor as the results suggest (see also Dulany & Hilton, 1991; Markus and Zajonc, 1985; Politzer & Noveck, 1991). Since the maxim

of quantity requires that speakers provide as much information as necessary, subjects may have interpreted the first alternative to mean that Linda was a bank teller but was *not* active in the feminist movement. The contextual framing of the task likewise suggests this interpretation. If subjects interpreted the task in this light, their judgments would no longer be considered erroneous -- or at least not as erroneous. In two experiments Dulany and Hilton (1991) examined this possibility and found that only 55%, and 32% (depending on the experiment) interpreted "Linda is a bank teller" in the way Tversky and Kahneman intended. Curiously, however, the choice of interpretation did not affect the rate of conjunction errors in these two studies.

The Fundamental Attribution Error. There is also some evidence that the perceived relevance of experimental materials may play a role in the fundamental attribution error, particularly in studies using the classic Jones and Harris paradigm (Jones, 1990; Jones & Harris, 1967). In these studies, subjects are told that a target person wrote an essay about a particular issue under either free- or forced-choice conditions, and then are asked to judge the target's "true" stance on the issue. Wright and Wells (1988) hypothesized that by giving subjects the essays before they made their judgments, experimenters implicitly indicated that the essays were relevant to the judgment task. When the perceived relevance of the essay was reduced by telling subjects that some of the materials they received might not be necessary for the task, Wright and Wells found the size of the fundamental attribution error to be substantially smaller.

Context effects in interpreting experimental materials

Conversational principles also affect subjects' understanding of such mundane aspects of experiments as instructions, rating forms, and questionnaires. Effects have been found for both the wording and layout of questions, and for the measures used to obtain subjects' responses.

Questionnaire design. Many of the questions posed in questionnaires are subject to more than one interpretation. When faced with ambiguities of this sort, Strack, Schwarz, and Wankë (1991) argue, subjects look to the question's context to identify the researcher's intended meaning. One aspect of the context is the preceding question, and, in the belief that related

questions are asked in a series, subjects may apply the cooperative principle to assess the intended meaning of the question. Strack et al. (1991) investigated these possibilities in a series of studies

In one study, Strack et al. (1991, Experiment 1) asked German students about their attitudes toward an "educational contribution." For half of the subjects this question was preceded by one that concerned *payments from* students; for the other half, the preceding question concerned *payments to* students. Not surprisingly, students in the latter condition were more favorably inclined toward the ambiguous "educational contribution," suggesting that they understood the question to concern *payments to* students.

Given these clear pragmatic effects, it is relevant to observe that reports of responses to survey questions virtually never include information on the context in which that answer was obtained. The distorting results of such context effects should be especially great in results that assess changes over time in some index (e.g., Presidential popularity, confidence in the economy, personal well being). If the context is different each time the question is asked, there is no straightforward way to distinguishing context effects from real change in the index.

Although researchers in the Intentionalist tradition have examined how the context affects the respondent's interpretation of experimental instructions and questionnaire items, they have given less consideration to the ways that respondents' expectations of the context in which their responses will be interpreted could affect the way those responses are formulated. But consider the following not entirely hypothetical interchange from a structured interview.

> Interviewer: How would you describe your health over the past two years? Would you say it was "excellent," "very good," "pretty good," "fair" or "poor"?
>
> Respondent: Well, two years ago I had a major heart attack, and last year I had another less serious attack, so I guess you could say "poor."
>
> I: Okay. And how is your health now? Would you say it was "excellent," "very good," "pretty good," "fair" or "poor"?
>
> R: Considering all I've been through, I'd say it was "pretty good."

It is clear that the "pretty good" in this example is intended to be understood as "pretty good in comparison to the way I was;" in terms of the response scale the interviewer is using, the respondent's present condition would more accurately be characterized as "fair" or "poor." Such responses have been recognized as a problem in structured interviews that have a quasi-conversational format, and it would be surprising if they weren't also a problem in questionnaires.

Response alternatives. Self reports of the frequency of particular behaviors depend upon how these behaviors are defined by the respondent. Since questionnaires are not always clear about an activity's definition, respondents may use the range of alternative frequencies provided to determine what the experimenter means by potentially ambiguous terms (Schwarz & Hippler, 1987; Schwarz, Strack, Muller, & Chassein, 1988). For example, when asking for quantitative estimates, survey researchers often provide respondents with graded categories (0-1/2 hr., 1/2-1 hr., etc.), and include a cut-off point on the scale (more than 4 hrs.). Bless, Bohner, Hild, and Schwarz (1992) asked respondents to estimate the amount of their leisure time they spent in a variety of activities, systematically varying the location of the cut-off point. They found substantial effects on responding depending on where the cut-off was located. Effects were particularly marked when the definition of the activity itself was vague (cultural activities vs. watching television), and when respondents were asked to estimate the percentage of their leisure time rather than the number of hours. Interestingly, according to Schwarz (1994) when the relevance of the scale is reduced (e.g., when subjects are told that the response alternatives are being pretested) effects of the response scale are mitigated.

Hilton (1990; in press) suggests that response alternatives may affect results in causal attribution studies. He notes that in such classic studies as McArthur's (1972), subjects attribute the observed behavior to single causes (e.g., actor, circumstances) simply by checking an item, while attributions to complex causes (e.g., actor+circumstances) must be written in. This may serve to focus subjects' attention on single causes, leading to the conclusion that they overlook consensus information that would lead to complex attributions Consistent with Hilton's analysis,

studies that provide all possible alternatives among the response set (e.g., actor, actor+circumstances, actor+object, actor+object+circumstances) have found that subjects provide more interactional attributions than was found in McArthur's original experiment (e.g., Hilton & Jaspars, 1987; Jaspars, 1983).

Summary and conclusions

In the past decade, considerable evidence has accumulated on the effects of conversational principles on subjects' interpretations of research materials. The results underscore the importance of investigators carefully examining the communicative effects of their stimuli and procedures. Implicitly, it seems, social psychologists have tended to conceptualize their interactions with their subjects in terms of a simple Encoder/Decoder model, while their subjects often have approached these interactions quite differently. One result has been that subjects and experimenters have imposed different interpretations on the conditions of the experiment. In an older terminology, subject and experimenter have been in different "psychological situations" (Lewin, 1951). No one would contend that all instances of the fundamental attribution error or the base-rate fallacy are artifacts of misunderstood communication, or that survey results are always contaminated by mistakes in question interpretation. At the same time, it behooves experimenters and survey researchers to appreciate that, whatever else they may be doing, they are communicating with their subjects and respondents, and that in communication it is intentions, not messages, that are being exchanged. In successful communication, the intention constructed by the addressee matches the communicative intention of the speaker.

3.3 Issues and Limitations

Although the Intentionalist approach has yielded considerable insight, like all of the models we discuss it is limited in its ability to account for the *social* nature of communication. In this section we discuss several issues that remain unresolved in current Intentionalist theories: the role of social information in the identification of intended meaning, the encoding of

communicative intentions, asymmetries between speaker and hearer, and the relationship of illocutionary and perlocutionary acts.

3.3.1 Effects of the Speaker on Identifying Communicative Intentions

Models in the Intentionalist tradition tend to focus on general pragmatic rules that apply across many situations. However, several of the studies we reviewed suggest that knowledge of the speaker, and particularly the speaker's relationship to the addressee, affects subjects' interpretations of the intended meaning of a message. For example, what is perceived as a metaphor when uttered by a fluent adult may be viewed as an error when uttered by a young child. Even in experimental contexts, knowledge of the source of a message may affect its interpretation. It is quite likely that manipulating the perceived source of the questionnaire (e.g., a mental health institute vs. a national polling service) in Strack et al.'s (1991) experiment would alter the interpretation of questions. However, the impact of the source on message interpretation has yet to be examined systematically.

Although the Gricean maxims provide a useful framework for the expectations communicators bring to communication situations, what constitutes a violation of the maxims will depend in part on assumptions about the speaker. Some investigators have begun to address this issue theoretically, if not empirically. Hilton (in press) notes that dispositional attributions (defined broadly to include personal characteristics, social category memberships, goals, and the like) can affect how the Gricean maxims are applied in message interpretation. Suspicions about the reliability of a court witness, for instance, will affect listeners' beliefs about the appropriateness of using the maxim of quality in interpreting his or her testimony (see also Schwarz, 1994). Even when veracity is not a central issue as it is in courtroom testimony, knowledge or beliefs about the speaker can affect hearers' interpretations. Consider the following example, suggested by Josef Schrock (personal communication):

Professor Why wasn't your paper in on time?

Student: Because the planets were in line last night.

The student's response is an apparent violation of the maxim of relevance, but Shrock observes that if the professor knew the student was a member of a astrologically-based religious cult, this perception might be revised. Knowledge of the speaker may likewise influence interpretations of the other maxims. No research to date has examined the role these factors in everyday conversation.

3.3.2 Encoding of Intentions

Although Intentionalist models are in principle models of both production and comprehension, virtually all research in this tradition has focused on how people interpret messages. That speakers create messages in accordance with Grice's cooperative principle and its associated maxims has typically been taken as a given, rather than as a hypothesis for investigation. For Intentionalist models to be able to account for both production and comprehension, researchers must move beyond experimental materials that incorporate predetermined communicative intentions to the investigation of everyday language production. This process will, however, require the development of more sophisticated ways than are currently available of identifying speaker's intentions in ordinary conversation.

Even if one accepts the cooperative principle and speech act theory as models of message production, many issues remain unresolved: When and why do speakers opt to express their intentions indirectly as opposed to directly? When and why do they choose to flout particular conversational maxims? What determines the choice of one form of indirect request, or one figure of speech, rather than another? These issues have been discussed theoretically (e.g., Gerrig & Gibbs, 1988; Glucksberg, 1989; Ortony, 1975), but there is limited empirical work to support the claims that have been made.

Roberts and Kreuz (1994) elicited from speakers their reasons for using various forms of nonliteral language (overstatement, metaphor, irony, indirect requests, etc.), and found a number of clear-cut patterns. Speakers reported they used overstatement to be humorous, to emphasize content, and to clarify points, and understatement to de-emphasize information and to express negative emotion. This study is a much-needed step in the right direction; however, people's

limited access to their own mental processes (Nisbett & Wilson, 1977) underscores the need for more refined techniques to measure communicative intentions.

A few studies have examined the way the social context affects the formulation of specific intentions. Francik and Clark (1985) found that subjects designed indirect requests to take into account potential obstacles the addressee might experience in trying to fulfill the request (e.g., willingness and ability to perform the task, memory for requested information). Holtgraves & Yang (1992) investigated the effects of request size, the relative power of the addressee, and social distance on the form of American and Korean college students' requests and found that all three factors, along with interactions among them, significantly affected the politeness of the request. Their findings suggest both that the three components of Brown and Levinson's model have psychological significance, and that a simp0le, additive model is not adequate.

Interestingly, there is some evidence to suggest that adherence to Grice's maxims and to politeness principles can have a *negative* effect on communication. Person, Kreuz, Zwaan, & Graesser (in press) examined tutoring dialogues, and found that tutors tended to avoid giving face-threatening negative feedback to students' vague or incorrect responses even when this negative feedback would have been beneficial. Instead, they often gave positive feedback to incorrect answers while providing the correct response. Person et al. argue that this practice may lead students to believe that their original answers were correct and to overestimate their understanding of the material. Similarly, Linde (1988) found that politeness in airline pilot's requests and suggestions could lead to misperceptions of their urgency or importance, and be contributing factors in serious accidents.

3.3.3 Speaker-addressee asymmetries

Intentionalist models implicitly assume that successful communication occurs; the investigator's task is to determine *how* it occurs. In this respect, such models are not terribly different from straightforward encoding-decoding models. The main difference lies in the relationship of the literal utterance to the underlying message. Why might the encoding and

decoding of intentions be less straightforward than some theorists appear to assume? It seems to us that the preoccupation of Intentionalist models with message comprehension has lead investigators to overlook the possibility that speakers and their addressees differ in what they perceive to be relevant, truthful, and so on (Sarangi & Slembrouck, 1992; Sperber & Wilson, 1986). The student in the earlier example who explained the lateness of a paper by referring to the alignment of the planets may have believed sincerely that he was following the maxims of quality and relevance, but most professors would be unlikely to see it that way. Sarangi and Slembrouck argue that most formulations of the cooperative principle fail to consider cultural and individual differences in background knowledge that can affect the way utterances are constructed and interpreted according to Grice's maxims.

Not only may speakers and addressees differ in terms of their understanding of what does and does not conform to Grice's maxims, but their conceptualizations of quality, quantity, relation, and manner may be *negotiable* through conversational interaction in at least two senses. First, through conversational interaction each participant can learn what the other finds informative, as a quality violation, and so on. As Sarangi and Slembrouck (1992) note, higher status participants may be able to enforce their definitions as the standard for the conversation. Second, utterances that appear to flout the maxims of quantity or relation do not always lead to searches for alternative meanings, but rather to requests for clarification. As we discuss in Section 5 below, there is a sense in which a message has not communicated at all until it is "fixed" by both parties to the exchange (Clark & Wilkes-Gibbs, 1986). To answer these questions, intentionalist models will need to move toward examining actual conversations in place of pre-constructed experimental vignettes.

3.3.4 Interaction Goals

An utterance has both illocutionary and perlocutionary force. The perlocutionary force of an utterance (i.e., the response it elicits from the addressee) is a consequence of its illocutionary force, along with a complex set of situational and motivational factors, none of which have been of particular interest to students of language. However, the relation of an utterance's

illocutionary and perlocutionary force is hardly an accident. Speakers formulate their utterances in order to accomplish particular ends, and the way an utterance is formulated will be very much a consequence of the end it is intended to accomplish. After all, the communicative intention that underlies an utterance is itself a product of a more general goal toward which the speaker's behavior is oriented. It makes sense to think of a *perlocutionary intention* (an intention to accomplish some specific result by an act of speaking) as underlying the speaker's communicative intention.

Higgins and his colleagues (Higgins, 1981, 1992; Higgins, McCann & Fondacaro, 1982) have pointed out that people employ language in an effort to achieve a variety of different sorts of goals in interaction. Of course, language is used to accomplish specific tasks (e.g., sharing information for solving a problem), but it also is used in the service of initiating or maintaining a social bonds *(social relationship goals),* maintaining or changing the participants' self images *(face goals),* and developing a common construction of the social world *(social reality goals).* Often, an utterance will serve more than one goal, and the goals of the interacting parties may not be identical. The assertion of a fact in response to a question may serve the task goal of informing, but the utterance may be formulated in a way that emphasizes the speaker's expertise — thus enhancing the speaker's self image.

It seems reasonable to expect a relationship between the way utterances are formulated and the interaction goals they are intended to serve, but we are unaware of any attempts to develop this relationship in a systematic way.

4. PERSPECTIVE-TAKING MODELS

4.1 Introduction

Perspective-taking models assume that individuals experience the world from different vantage points, and that the nature of each individual's experience is to some degree dependent upon the particular vantage point he or she occupies. According to Piaget and Inhelder (1956) the ability to appreciate differences between one's own and others' perspectives is an important early developmental achievement. Effects of perspectival differences are most clearly seen when

the individuals occupy physically different vantage points, as in Piaget's original experiments, but perspective-taking has come to denote points of view that derive from differences in a variety of kinds of knowledge.

Perspective-taking models of language use focus on the shared context that communicators must identify or create in order to produce and comprehend messages. Shared contexts are constructed, at least in part, through a process of reciprocal perspective-taking: Both speakers and hearers must, in George Herbert Mead's familiar characterization, "take the role or attitude of the other" — that is, each must try to experience the situation as it is experienced by the other participants. By means of this reciprocal process, the shared communicative context is continuously expanded and refined.

The general idea that communicators tailor speech to their addressees has been widely expressed (e.g., Bakhtin, 1981; Clark & Marshall, 1981; Clark and Carlson, 1982; Krauss & Fussell, 1991; Mead, 1934; Rommetveit, 1974; Volosinov, 1986). In his seminal book *On Message Structure* , Ragnar Rommetveit contended that

> 'taking the attitude of the other' constitutes an integral, basic, and thoroughly intuitively mastered component of communication under [a variety of] institutional and situational conditions....It constitutes the most pervasive and most genuinely social aspect of our general *communicative competence*..." (Rommetveit, 1974).

The same idea is stated more tersely by Roger Brown (1965) in the first edition of his book, Social *Psychology*: "Effective coding requires that the point of view of the auditor be realistically imagined." Perspective-taking models focus on the ways that participants' assumptions about each others' perspectives constitute part of a message's interpretive context. For such models, the social construction of meaning derives from participants' implicit theories about what their partners know, feel, think, and believe.

Perspective-taking can be shown to occur at virtually all levels of communication, from the most molecular to the most molar. At a relatively molecular level, it can be shown that speakers adjust the articulation of content words in accordance with a listener's informational

requirements. When context makes a word highly predictable ("A stitch in time saves *nine"),* it will be articulated less intelligibly than it will in a sentence like "The winning number is *nine.,"* where the context is uninformative (Lieberman, 1963; Hunnicut, 1985). Fowler (1987) has shown that the first time a word is articulated in a discourse its duration is longer and its amplitude is greater than in subsequent articulations, and these differences affect the word's intelligibility in isolation. Such articulatory variations (or "attunements," as Fowler terms them) seem to represent attempts by speakers to make their messages' content intelligible, and reflect a rather sophisticated implicit understanding of some elements of speech perception. However, most studies in the perspective-taking tradition have focused on communicators' attempts to affect message comprehensibility by adjusting conceptual content in accordance with an addressee's point of view.

4.1.1 Defining "Perspective"

Although many writers have endorsed the idea that perspective-taking is fundamental to interpersonal communication, few have attempted to specify with any precision just what constitutes a "perspective." Graumann (1989) points out that historically the term has been used in a number of quite different ways in psychology. In psychophysics it refers to the perceiver's angle of regard, while in personality and clinical psychology, perspective-taking concerns the ability of one person to empathize with the situation of another. In an attempt to specify some of the components of another's perspective relevant to the psychology of language and communication, Krauss and Fussell (1988) included: (a) background knowledge, beliefs, and attitudes; (b) current interpretations of stimuli and events; (c) plans, goals, and attitudes; (d) social context; and (e) physical context. Other personal attributes can be added to this list, including speech style, emotional state, and importantly, the other's current state of message comprehension. Indeed, virtually any aspect of a person might be thought of part of his/her perspective, and something that at least potentially should be taken into consideration when formulating a message. To summarize, a person's perspective consists of a combination of

relatively stable components (e.g., background knowledge, beliefs, attitudes, etc.) in addition to such changing factors as vantage point, moment-to-moment states of comprehension.

Virtually all Perspective-taking models regard an addressee's representation of the *speaker's* perspective as a critical component of his/her perspective. Some (e.g., Clark & Marshall, 1981) following (Schiffer, 1972) argue that speakers and hearers must either directly calculate, or conclude from the application of a heuristic, that a state of *mutual knowledge* exists: i.e., that each participant both knows that a particular state of affairs is true, and knows that the other knows, and knows that the other knows the other knows, etc. ad infinitum (see Section 3.1.3). Others (e.g., Rommetveit, 198; Sperber, & Wilson, 1986) place greater emphasis on the ability of addressees to infer information from the message that will enable them to fill in gaps in common ground. In this way, messages themselves serve to create common ground. Theorists differ in the way they view this aspect of common ground — i.e., whether complete mutuality is required, or whether it is sufficient that the speaker knows that the addressee knows that the speaker knows a particular fact (see, e.g., the collection of papers in Smith, 1982). Nonetheless, although most agree that at least some measure of reciprocity is required, little effort has gone into specifying how much.[18]

4.1.2 Reference

The early discussions of the role of perspective-taking in communication by Bakhtin, Mead and others were almost exclusively theoretical, but beginning in the 1960's a substantial body of empirical work has accumulated, focused primarily on the referential use of language. Reference entails using language to designate some state of affairs in the world. The state of affairs may be a singular object (a particular dog), a category of objects (German shepherds), an abstract concept (justice), a feeling, or some other specifiable thing. Although reference is arguably the most elementary linguistic act, it underlies most of the more complicated purposes to which language is put. In order to perform an act of reference, a speaker must formulate a *referring expression* — a word or phrase that will permit the addressee to identify the referent. In his classic essay, "How shall a thing be called" Brown (1958) noted the remarkable cognitive

complexity that underlies a successful act of reference. Most common objects can be referred to in more than one way, and the way that is most appropriate will vary from situation to situation. An effective act of reference requires the speaker to incorporate the addressee's perspective into the referring expression.

4.2 Research Findings

Research on perspective-taking typically has used experimental paradigms in which speakers' communicative intentions are assigned by the experimenter. For example, a speaker might be instructed to characterize (e.g., name or describe) a picture of an object or an abstract design, or to give someone directions to a destination. In practice, investigators have employed two types of stimuli as the to-be-referred-to items: stimuli for which there are pre-existing names (e.g., public figures, kitchen utensils, architectural landmarks) or "innominate" items. chosen because they do not resemble real-life objects and hence lack agreed-upon names (e.g., abstract designs, Chinese Tangram figures; see Figure 2, Panels A and B). The former can be used to examine how speakers' perceptions of their addressee's background knowledge affect the referring expressions applied to these stimuli. Because the latter type are uncodified — i.e., lack a lexical entry that could serve as a conventional linguistic representation of the item — they can be used to study the process by which communicators coordinate or establish a joint perspective (e.g., how a speaker might come to call the second stimulus in panel A of Figure 2 a "spider"). The aim of these studies has been to assess how perspective-taking influences linguistic aspects of speakers' messages, and how these linguistic realizations of perspective-taking affect the communicative adequacy of the messages.

Insert Figure 2 About Here

Perhaps the most commonly used experimental paradigm to study the effects of perspective-taking on communication has been the so-called referential communication paradigm in which one person describes or designates one item in an array of items in a way that will allow another person can identify the target item. The paradigm allows the experimenter to control such relevant factors as the relationship of the target item to the other items in the array,

real or attributed properties of the addressee, the communication channel, etc. Notice that in this paradigm, the speaker's communicative intention is assigned by the experimenter, and the aim is to identify how that intention is realized linguistically by considering the addressee's perspective.

We first review research on perspective-taking in non-conversational contexts, in which the speakers' sole information about the addressee stems from what they are told by the experimenter and what they infer from this information. Then, we discuss research that has been carried out in conversational contexts, in which hearers are able to modify speakers' prior expectations about their perspective through the use of a variety of feedback mechanisms.

4.2.1 Non-Conversational Paradigms

In studies of perspective-taking in non-conversational settings subjects are typically asked to create names or descriptions for items in a set of stimuli that will enable the intended recipient (another subject or the subject him/herself) to select the referent from the full array. In most cases, the communicative effectiveness of these messages is assessed by later having subjects (the intended recipient and/or some other persons) attempt to identify the referents of the messages. Two types of dependent measures are used: measures that reflect perspective-taking in message production (e.g., lexical choice, message length), and measures that reflect the communicative effectiveness of the message (e.g., the recipient's accuracy in selecting the intended referent). Non-interactive paradigms make it relatively easy to examine the effects of prior knowledge or beliefs about the addressee on message production and comprehension in situations in which no other evidence about that addressee (e.g., his/her current focus of attention) is present. Non-interactive paradigms provide an excellent opportunity to observe perspective-taking in action, and virtually all studies using this procedure have supported the conclusion that communicators adapt their messages to others' perspectives in a number of respects.

Others' visual fields

As Piaget and Inhelder (1956) noted, each individual views the environment from a different visual angle, and successful reference to entities in that environment requires speakers

to take the point of view of their addressees. One aspect of the physical environment that differs depending upon angle of view is the relative spatial arrangement of objects and persons. Levelt (1983; 1989) has noted that there are a variety of ways in which speakers can describe spatial locations: *egocentrically*, with reference to themselves (e.g., "in front of me"), from their addressee's perspective (e.g., "in front of you"); or from a mutual or "neutral" perspective ("between us"). It has been suggested that speakers find messages from egocentric perspectives easiest to produce, but that addressee-based perspectives are easier to comprehend (Levelt, 1989; Miller & Johnson-Laird, 1976; Schober, 1993).

Several studies have examined how speakers' messages take such differences in spatial perspective into account.[19] Herrmann and his associates (Herrmann, 1988) had subjects view computer screens displaying two identical target objects, with a specification of the speaker's and a hypothetical addressee's locations relative to these objects. Speakers' descriptions of the relative location of an object were more likely to take the addressee's perspective as the difference in their vantage points increased. Schober (1993) had subjects refer to one of two identical circles in different locations in a visual display in a way that would allow an imaginary addressee to identify the intended referent. Speakers tended to use either matcher-centered (77%) or both-centered (21%) descriptions. Furthermore, the tendency to use matcher-centered descriptions was substantially higher (about 90%) when the vantage points were off-set rather than identical (41%). These findings were replicated in a related study using a more complex display in which several of each type of object were scattered in a large circle in a manner similar to toppings on a pizza, Schober (1992, Nov.).

The particular attributes of a referent speakers choose to include in their referring expressions has been shown to vary depending on the array of alternatives (Deutsch, 1976; Olson, 1970) but see Carroll, , 1985), presumably because the informativeness of each attribute depends on whether or not it is shared by other potential referents. However, several studies have shown that "informativeness" (in this general sense) is not the only criteria speakers use when formulating referring expressions in these situations (e.g., Deutsch & Pechmann, 1982;

Herrmann, 1983; Herrmann & Deutsch, 1976; Mangold & Pobel, 1989) . Speakers often include more than the minimum information necessary to identify a stimulus, especially when other attributes are of greater salience than the discriminating ones. These findings have been interpreted as evidence for perspective-taking in reference, and this interpretation is supported by fact that hearers' identifications generally are somewhat more accurate when the additional details are included. However, none of the studies ruled out the possibility that speaker's perceptual or thought processes, rather than an explicit intention to assist the listener, was responsible for the effects.

In a better controlled study, Hupet, Seron, and Chantraine (1991) created four sets of Tangram figures like those in Panel B of Figure 2 in which *discriminability* and codability (i.e., the ease with which they could be named out of context) were orthogonally varied. If the attributes of a high codability stimulus incorporated into a referring expression were due solely to the speaker's cognitive processes, we would anticipate no difference between high and low discriminability conditions, but this is not what Hupet et al. found. Rather, although speakers used names alone when discriminability was high, they virtually always added identifying information to the name when it was not, suggesting that communicators anticipate addressees' potential problem in identifying the referent.

The findings of these studies are consistent with the proposition that speakers take their addressees' visual environments into account in formulating messages, but Perspective-taking models make a much stronger claim about the role of the addressee in message production: Not only do speakers consider relatively transparent aspects of others' points of view, but they also rely on their own mental representations of others' knowledge, beliefs, attitudes and so on.

Generalized conceptualizations of others

Mead (1934) contended that the most fundamental distinction a language user had to make was between the self and another person, and a number of investigators have examined how the distinction is reflected linguistically. Krauss, Vivekananthan & Weinheimer (1968) had subjects name or describe color chips either for their own use or for someone else, and found that

the labels more accurately communicated to others when they were originally intended for another person. Messages intended for another person tended to draw on conventional color terminology or the colors of familiar objects, while those intended for a subjects own use were more likely to use idiosyncratic and essentially private associations (e.g., "the color of my bedspread"). Similar results have been reported by Gatewood & Rosenwein (1985), Innes (1976) and Kaplan (1952) .

In a more recent study, we (Fussell & Krauss, 1989a) found that descriptions of nonsense figures, such as those in Panel A of Figure 2, were more than twice as long on average when they were intended for another person's use, as contrasted to one's own use. In addition, messages formulated for a subject's own use more often characterized stimuli figuratively, in terms of objects they resembled, than did messages for others. Presumably, speakers describing the stimuli for others avoided figurative characterizations when the resemblance between the stimulus and the object might not be apparent to the addressee. Instead, they based their descriptions on the stimulus's geometric elements. We also found that the communicative adequacy of a description was affected by the perspective taken by its creator: People were better able to select the referents of messages formulated for another's use compared to messages formulated for the creator's own use.

Categories of addressees

In the studies we have described, speakers knew nothing about their addressee except, perhaps, that he or she was a fellow student. The effects of perspective taking on message production and comprehension are not, however, limited to the self/other distinction. Individuals are members of a variety of social categories (e.g., parent, psychologist, sports fan, New Yorker), and these categories can serve as a basis for inferences about their perspectives. Given the knowledge that someone is a baseball fan and a psycholinguist, one can assume that he or she will know that the Cardinals are from St. Louis and that an "allophone" is not a French telephone. We would expect speakers to consider the social category memberships of their addressees when formulating their referring expressions, and research suggests that they do.

Early support for this notion came from a field experiment by Kingsbury (1968), who found that responses to requests for directions were longer and more detailed when the requester was perceived as an "out-of-towner" rather than as a local, presumably because respondents assumed that out-of-towners would require more information. The sensitivity of respondents in this natural situation to the addressee's presumed perspective was striking. Asking for directions in a noticeably nonlocal accent produced the same results as explicitly identifying oneself as an out-of-towner. An addressee's social category memberships also influence the extent to which speakers tailor spatial descriptions to that listener's point of view. Graf (described in Herrmann, 1988) found that students were more likely to use addressee-centered references when the addressee was identified as a child or professor, rather than another student.

Kogan (1989), investigating the effects of the addressee's age category on elderly and middle-aged adults descriptions of the nonsense figures originally used by Krauss & Weinheimer (1964; 1966), found that speakers tended to use more figurative descriptions with members of their own age group.[20]

The Kingsbury and the Graf studies demonstrate how others' category membership can affect the message production process. However, neither measured the communicative effectiveness of the messages for addressees who are members of the intended social category or members of other social categories. To date, there is very limited evidence on this issue using a non-conversational paradigm, and such evidence as exists is mixed. Kogan (1989) found that elderly speakers' message were poorly understood by both middle-aged and elderly addressees. Unfortunately, the report is somewhat sketchy, and it is difficult to determine the source of these difficulties. Nonetheless, as we shall see below, there is substantial evidence from conversational paradigms demonstrating effects of category-based perspective-taking on comprehension.

Individual characteristics of addressees

Although social category memberships are an important source of information about another's perspective, often this information can be supplemented by direct knowledge of the

addressee When individuals interact over time, they have an opportunity to amass a stock of what Clark and Schaefer (1987) term "personal knowledge" — shared information drawn from their accumulated shared experiences. In combination with the more public common ground shared as members of the same social groups, this personal knowledge can be utilized by speakers to formulate informative messages. Consistent with this assumption, Fussell and Krauss (1989b) found that descriptions addressed to a specific friend communicated more effectively to that friend than to a randomly selected recipient.

Interaction over time also leads to a growing awareness of others' attitudes towards issues, other individuals, and the like. Although there is little evidence on how attitudinal components of others' perspectives are assessed and used in message formulation, several studies by Higgins and his associates support the conclusions that these factors are indeed considered by the speaker (see Higgins, 1992; McCann & Higgins, 1992, for a review). Higgins and Rholes (1978) found that messages describing particular target persons tended to incorporate information biased in the direction of the addressee's opinion of the target person, and to minimize details inconsistent with the addressee's perspective. In a later study, McCann, Higgins and Fondacaro (1991) found that individual subjects adapted their messages to each of to different addressees when there was little delay between the two conversations.[21]

Building models of the addressee

In many non-conversational settings (e.g., writing articles, giving lectures) communicators will refer to the same object or concept more than once, and, to do so felicitously they must update their model of their addressees in accordance with what they have said previously. One mechanism that is employed is the use of indefinite and definite articles to distinguish between initial acts of reference and subsequent ones (Linde & Labov, 1975; Osgood, 1971; Sridhar, 1988) . In English, use of the definite article implies that the noun it precedes is "given" (rather than "new") information (Bolinger, 1972; Clark & Clark, 1975), and thereby part of the communicators' common ground.

Hupet and Chantraine (1992) found evidence that subjects use definite articles to indicate the "givenness" of information. They had subjects describe Tangram figures over the course of four trials, and varied whether the speaker thought the same addressee or a new one would receive their messages on each trial. Although the total number of words per figure did not change across trials in either condition,[22] subjects who thought they were addressing the same individual on subsequent trials were more likely to use definite references and to introduce one-word labels for the stimuli than those who thought they were addressing different people each time. Curiously, however, these differences did not appear to affect the accuracy with which an actual listener could identify the intended target.

Although these studies demonstrate that communicators can modify their mental model of the addressee over the course of a narrative, other evidence suggests that the process of updating can be problematic for communicators. According to Traxler and Gernsbacher (1992; 1993), successful messages require the active construction of a representation of the addressee, and in non-conversational settings this may be difficult because communicators lack information about how well their messages are being understood. In a series of studies, Traxler and Gernsbacher examined how feedback from readers affects writers' ability to construct successful referring expressions. In one study (Traxler & Gernsbacher, 1992, Experiment 1) subjects tried to write descriptions of Tangram figures that would enable another person to identify the figure in an array consisting figures that were targets on other trials and several distracters. These descriptions were given to two subjects, who attempted to identify the correct referent. Subsequently, half of the original writers were provided with information as to how many of their messages were correctly understood and the other half was not. Then, each writer created modified descriptions of the same figures. The same subjects read the modified descriptions, and then the procedure was repeated a third time.

When writers received feedback, the communicative effectiveness of their messages increased on each trial; without feedback, no improvement was seen. In subsequent studies, Traxler and Gernsbacher demonstrated that the effects of feedback transferred to descriptions of

other Tangram figures (Traxler & Gernsbacher, 1992, Experiment 2), and that having the writer perform the reader's task was also an effective means of providing feedback (Traxler & Gernsbacher, 1993). Traxler and Gernsbacher argue that writers attempt to take their audience's perspective into account when they create their messages, but that they have difficulty constructing an accurate view of the audience when feedback is unavailable.[23]

Summary and conclusions

Studies using the non-interactive paradigm illustrate the effect of perspective-taking on message construction and interpretation, but the non-interactive (often written) mode of communication limits the generalizability of their findings and leaves unanswered many questions about the way perspective-taking operates in the most common communicative situation — conversation. Perspective-taking in non-interactive contexts tends to be conceptualized in a static, all-or-none fashion (e.g., the other either is or is not a member of a particular social category; certain knowledge either is or is not accessible to the other, etc.). Such characterizations are inappropriate for dynamic forms like conversation, in which each participant's mental model of the other may change on a moment-to-moment basis. For this reason, among others, much current research on perspective-taking employs situations in which immediate feedback from the addressee is available.

4.2.2 Perspective-Taking in Conversation

In conversational contexts, communicators can draw upon information from a variety of sources. These include overt questions and comments, vocal back-channel responses (e.g., "uhuh," "um") and nonvocal back-channels (e.g., smiles, gaze, head nods) (see, for example, (Duncan & Fiske, 1977; Kendon, 1967; Schegloff, 1982; Yngve, 1970) , and somewhat more indirectly, the appropriateness of the addressee's subsequent contributions or actions. The availability of feedback has several interrelated effects on communication, of which two are specifically relevant to Perspective-taking models.

First, feedback reduces the pressure on a speaker to create a fully communicative message at the outset, since additional talk can be used to clarify misunderstandings (Auer, 1984;

Clark & Wilkes-Gibbs, 1986; Sacks & Schegloff, 1979) . For instance, speakers can use "try-markers" (rises in intonation at the end of declarative statements) to mark propositions as potentially problematic for the listener, and to indicate that the speaker is prepared to expand on them if necessary. They may also use "installment" phrases (Clark & Wilkes-Gibbs, 1986) which provide information incrementally, with pauses between segments for listener feedback to allow the listener to signal understanding, as in "John, ... the guy downstairs, ... whom we met yesterday ..." (Sacks & Schegloff, 1979). A third device speakers can use is "pre-sequences" (Jefferson, 1975), or preliminary queries (e.g., "Do you remember John?") to establish whether some body of knowledge is or is not part of the shared communicative environment, prior to the formulation of a referring expression proper. Thus, in comparison to non-interactive contexts, feedback greatly increases a speaker's options for creating referring expressions.

The availability of feedback also enables communicators to accumulate a stock of common ground that can be drawn upon in future interaction. Speakers can propose names and descriptions, and determine the addressee's comprehension immediately. By so doing, they can be more confident that the addressee has understood, and build on this shared knowledge in subsequent messages.

To examine these processes, researchers have developed an interactive version of the referential communication task, in which speakers and hearers communicate directly, usually in the same place at the same time. One person, whom we will call the *director*, following Clark & Wilkes-Gibbs' (1986) terminology, must refer to a series of stimuli such that another person, called the *matcher*, can identify the intended referent in the full array. Matchers are typically separated from directors by a barrier, but different studies vary the freedom with which participants are allowed to converse. Typically the elements of stimulus array are arranged in one order for the director and in a different order for the matcher, and the director's task is to name or describe each stimulus in a way that will permit the matcher to identify it.

Reference in interactive context

As we have noted, the availability of feedback allows speakers to create messages in ways that they cannot in non-interactive contexts. When assessing Perspective-taking models a key comparison is between directors' first messages for each referent before feedback from the addressee has been provided and messages created in a non-interactive condition. Several studies have found significant differences between the two. For instance, Schober (1992) found that directors' descriptions of spatial locations were less likely to take the matcher's perspective in the interactive Pairs condition than in the Solo condition. Comparable differences between referring expressions in interactive and non-interactive settings have been found for conceptual perspective-taking. For instance, Fussell (1990, Experiment 2) found that referring expressions for public figures were significantly longer in the non-interactive condition.

Building shared perspectives.

As they interact, communicators receive additional bits of evidence that allow them to fine-tune their assumptions about each other's perspective. Several investigators have examined the development of referring expressions over time, using some version of the interactive referential communication paradigm both with uncodified stimuli, and with objects and concepts that have conventional names.

In an early study, Krauss & Weinheimer (1964, 1967) found that when pairs of communicators repeatedly referred to nonsense figures like those depicted in Figure 3.1, panel A, their descriptions became more succinct over successive occasions of mention. For example, "looks like a Martini glass with legs on each side," might gradually be shortened to "Martini," (see Figure 3). This abbreviation phenomenon has been replicated in several studies using nonsense figures (Clark & Wilkes-Gibbs, 1986; Hupet, Chantraine, & Neff, 1993; Hupet et al., 1991; Wilkes-Gibbs & Clark, 1992), persons, locations and objects (Clark & Schaefer, 1987; Fussell, & Krauss, 1992; Garrod & Anderson, 1987; Isaacs & Clark, 1987; Schober, 1993). The tendency for referring express ions to grow shorter over successive occasions of mention has been interpreted as support for the idea that conversational partners construct a shared

perspective on the referent they use for subsequent communication, an interpretation supported by studies showing that when feedback is delayed or otherwise disrupted, the abbreviation process is affected (Krauss & Bricker, 1966; Krauss & Weinheimer, 1966) .

Insert Figure 3 About Here

For speakers to make the best use of feedback, not only must it be provided in a timely fashion, but it must be provided by all addressees. Kraut, Lewis and Swezey (1982) found that feedback had both general and individuating effects on message quality. It improved the comprehension of both intended addressees and overhearers, but it benefited the comprehension of addressees more than that of overhearers. Presumably, feedback provides speakers with moment-to-moment information about an addressee's perspectives, and allows messages to be tailored more precisely to that addressee's informational needs (see also Schober & Clark, 1989). In addition, speakers do not assume that joint perspectives achieved with one conversational partner can be extended to new partners; rather they strive to re-establish a shared orientation with the new partner (e.g., Wilkes-Gibbs & Clark, 1992).

While it is obvious that feedback plays an important role in coordinating conversation, less is known about how speakers and hearers produce and understand feedback. The subtlety of the processes involved is illustrated in an experiment by Chen (1990), who had subjects communicate in a standard referential communication task using Tangram figures resembling those used by Clark & Wilkes-Gibbs, but different in one important respect. In the Clark & Wilkes-Gibbs study, as in most such studies (but see Traxler & Gernsbacher, 1992, 1993), the sets of stimuli participants had on a given trial were identical. In Chen's study, however, unbeknownst to the participants, on certain trials some of the figures in one participant's set were distorted versions of figures in the other's set. As a consequence, for these distorted pairs one participant's description was not, from the other's perspective, a really good description of any of the stimuli in the set. Chen videotaped the interactions and coded a number of verbal and nonverbal behaviors. He found clear differences between the addressee's behavior on "normal"

and "distorted" trials. For example, head nods, smiles, and brief verbal interjections such as "yeah" or "uh-huh" were about twice as frequent when both participants had the same set of stimuli. Interestingly, although Chen had expected to find evidence of "signals of disconfirmation" (e.g., frowns or head shakes in place of a smile or a nod) to indicate the message had not communicated well, that is not what he observed. Rather, it appears that participants signal disconfirmation by withholding back-channel responses at points where they are expected.

Such feedback, and the knowledge of its availability, transforms the communication situation in an important way. It permits the speaker to modify tentatively formulated assumptions about what the listener knows as the interaction proceeds. In this way, feedback can mitigate some of the consequences of biases implicit in communicators assumptions about others' perspectives. Although we describe the process as perspective taking, it may be more useful to think of perspective as something that is *achieved* (rather than *taken)* in the course of interaction. In effect, the availability of feedback redistributes the cognitive load of message production and comprehension. If the speaker is cognizant of the moment-to-moment state of the addressee's understanding, there is less need to rely on a model of the addressee's knowledge constructed from prior assumptions; consequently, there is less need to engage in the complex processing required to formulate effective models. Conversely, an addressee who finds a message ambiguous or incomprehensible can avoid some of the cognitive work involved in making sense of it by signaling a lack of comprehension.

Current feedback vs. prior beliefs

Clearly, feedback is important for perspective-taking. What is not clear is whether feedback alone is sufficient to coordinate meaning in a timely fashion. There is reason to believe that it is not. For example, before any feedback has been received, speakers must create an initial message, which requires that the speaker make some appraisal, however tentative, about what the other knows. Try-markers, installment noun phrases, and pre-sequences can mitigate the effects of erroneous inferences by requiring that the listener signal comprehension of

sequentially presented propositions, but their overuse runs the risk of insulting the listener. Use of a try-marker with a commonly-known fact allows for the possibility that the addressee is ignorant of it, and may be taken as a reflection of the speaker's assessment of the addressee. Imagine someone describing a building's architecture as "…something like the White House?…You know, where the President lives?…In Washington, DC.?" The maxim of quantity (Grice, 1975) would lead one to the conclusion that the speaker does regard the addressee as well informed.

How do speakers go about formulating a tentative model of the other's perspective in the absence of feedback? A likely possibility is that they use an addressee's social category memberships to make an initial assessment, and then use feedback to modify that assessment as necessary. Fussell and Krauss (1992), Experiment 2) tested this hypothesis by first assessing speakers' assumptions about their addressees, and then examining how these assumptions found expression in language. Dyads were run in a conversational version of the referential communication similar to that used by Clark and Wilkes-Gibbs (1986). Consistent with a Perspective-taking model, prior beliefs about the listener's perspective affected the way speakers referred to the objects: As the perceived probability that the listener would know the referent's name declined, speakers provided more additional identifying information. However, the effect, while statistically reliable, was considerably smaller than one might predict from noninteractive experiments. Indeed, many speakers referred to the objects by name and provided little or no additional identifying information, even when the perceived likelihood that the other would know the object's name was low. Similar results were found when public figures were used as stimuli (Fussell & Krauss, 1992, Experiment 1).

Further evidence that both feedback and prior knowledge about addressee's social categories is important to perspective-taking comes from a study by Isaacs and Clark (1987) using a referential communication task in which participants communicated about New York City landmarks. Isaacs and Clark found that within the first few exchanges of talk, speakers had adapted their referring expressions to their addressee's degree of familiarity with New York City.

What is of particular interest is that speakers appeared to use their classifications of the addressee's expertise to generate expectations about the likely familiarity of other landmarks.

4.3 Issues and Limitations

The studies reviewed in this section demonstrate that perspective-taking based on both prior beliefs and on interactional feedback, plays a fundamental role in communication. The role of prior beliefs is much stronger in non-conversational contexts, in which speakers are denied the opportunity to revise their messages on the basis of the addressee's apparent understanding. A number of issues involved in perspective taking remain poorly understood. In this section, we briefly describe several of them.

4.3.1 Assessing Perspective

A serious shortcoming of current models is that most investigators simply have assumed that perspective taking occurs, without trying to understand the process by which it is accomplished. Little effort has gone into identifying what it is that participants actually assume about their partners. Instead, there has been a tendency toward circular reasoning in the identification of speakers' assumptions about their addressees' perspectives and the effects of these assumptions on message formulation (Krauss & Fussell, 1988). For example, from a lengthy description of the route to a destination, one might conclude both that the speaker assumed the addressee was unfamiliar with the area, and that the speaker created a longer message to compensate for this lack of familiarity (cf., Kingsbury, 1968). To avoid this circularity, it is important to ensure that the addressee's perspective is the determining factor in message production, rather than such other factors as cognitive load or salience (Brown & Dell, 1987) . Although studies that compare messages for different categories of addressees provide evidence of perspective-taking, it still is important to verify that the subject as well as the experimenter has identified the addressee as a member of a particular category.

A few studies have examined speakers' inferences about their audience, independent of the message produced, and these studies have demonstrated that the task of taking another person's perspective may be more difficult than typically assumed. As part of our study of men

and women's conversations about everyday objects (Fussell & Krauss, 1992, Experiment 2), for example, we asked an independent group of subjects to estimate the proportion of undergraduates who could name each of the stimuli. Their estimates were impressively accurate, even when the estimator him or herself didn't know knew the name of the item. However, estimates tended to be strongly biased in the direction of the estimator's own knowledge—those who knew an object's name tended to *overestimate* its identifiability and those who didn't know the named tended to *underestimate* it. These results have been replicated with other types of knowledge, including public figures (Fussell & Krauss, 1992, Experiment 1), New York City landmarks (Fussell & Krauss, 1991) and general knowledge questions (Nickerson, Baddeley, & Freeman, 1987) , as well as for behaviors and attitudes (Fussell, 1992; Nisbett & Kunda, 1985) . It is likely that other cognitive biases also influence the assessment of others' perspectives.[24]

Similarly, relatively little attention has been paid to how speakers come to understand that prior assumptions about their addressees must be modified. In some cases, misunderstandings are clear from addressees' verbal or physical responses, and suitable repairs can be made (Fox, 1987). But Chen (1990) found that *withholding* backchannel information was an important means by which addressees informed the speaker about their comprehension. Although addressees will often a lack of understanding directly ("Who's he?", "I'm not sure what you mean," etc.), the process by which such signals are conveyed in the backchannel (Yngve, 1970) can be quite subtle, and may depend heavily on the participants' history of interaction with one another.

4.3.2 Individual Differences In Perspective-Taking

For practical reasons, studies of perspective taking has focused on the linguistic practices of college students. Taking another's point of view is not something that young children do well, and the ability appears to develop as the child matures (e.g., Glucksberg et al., 1975). It would be reasonable to expect individual and group differences in the ability of adults to assess others' perspectives, as well, and there is some evidence that such differences exist. For instance,

Kogan's (1989) study, described above, found that messages created by elderly adults were less communicative than those by middle aged adults (see also Hupet et al., 1993, described below).

Significant differences within age categories may exist, as well. Hupet and Chantraine (1992) found that while half of the subjects in the "same addressee" condition of their non-conversational task used an increasing number of definite references and labels on successive trials (indicating a shifting model of the addressee over time), the other half did not. Such results may reflect differences in people's ability to assess others' perspectives. This interpretation is plausible in spatial perspective-taking, where it has been shown that subjects require more time to create messages that take into account the addressee's perspective as that perspective is increasingly offset from the speaker's own point of view (Herrmann et al. 1987). Such considerations suggest that perspective-taking studies might benefit from subjects drawn more widely from the general population, and from looking for individual or subgroup differences within such samples.

4.3.3 Effects of perspective-taking on message characteristics

Understanding how perspective-taking is accomplished is only the first step in understanding how perspective-taking affects communication. The next, much more difficult, step is to understand how assessments of others' perspectives are implemented in message formulation. There is substantial evidence that perspective-taking affects message length and the use of figurative descriptions, but much more research will be required to explicate these processes fully. In all likelihood, simple measures like length will be inadequate for understanding reference to more complex objects and abstract concepts. For example, speakers may choose to describe an abstract concept in metaphorical rather than literal terms. In such cases, identifying perspective-taking components to the message will require an understanding of the speakers' other options, which might include analogies and other metaphors, in addition to literal statements.

Although observational studies (e.g., Auer, 1984; Sacks & Schegloff, 1979; Schegloff, 1972) suggest that the use of try-markers, installment phrases, pre-sequences, and related

devices reflect speakers' attempts to tailor their messages to their addressee's perspective, such observations provide less-than-conclusive evidence that the speaker actually is thinking about the addressee's needs during message formulation. Try-markers can be used when the listener's ability to identify the referent is less than certain, but they also have other functions (e.g., marking the speaker's own hesitancy about the proposition expressed). The student who replies "Beethoven?" with rising intonation to the question "Who wrote the Brandenburg Concertos" is not signaling that the *inquisitor* might not know the answer. Typically, researchers try to infer the function a try-marker serves from the context -- a method that can involve circular reasoning. Sophisticated investigative procedures will be necessary to understand the role played by interactive forms of reference in perspective-taking.

4.3.4 Multiple Listeners

A major challenge for Perspective-taking models is situations in which more than one addressee is present. Two broad classes of situations can be identified: situations in which a speaker wants to convey the same message to everyone present despite differences in perspective, and the more complicated case in which a speaker wants to convey different messages to different hearers.

The first category of situations, typical of multiparty conversation, classroom lectures, and the like, has not to our knowledge been studied empirically. Speakers might deal with multiple hearers in a number of ways: they might try to take into account the perspective of each group member; they might generalize across the group, they may consider the 'normative addressee' (Volosinov, 1986). Factors influencing a speaker's strategy might include the type of discourse, the importance of accurate communication, the number of participants, and the relative status or importance of particular participants.

The second situation, in which the speaker wants to convey different messages to different hearers, can arise in a variety of circumstances. Parents may want to speak cryptically (e.g., about toys or candy) in front of their children, friends conversing in public may want discuss private matters without being understood by eavesdroppers. In interactions involving

multiple listener, different listeners may have quite different "participatory statuses" (addressees, intended hearers, overhearers, etc. (Bell, 1980; Clark & Carlson, 1982; Goffman, 1976), and these will determine the perspectives the speaker must take into account in formulating a message. When faced with the problem of unwanted overhearers, the speaker must assess both what will be comprehensible to the addressee and what will not be comprehensible to the overhearer (Clark & Schaefer, 1987). We will return to this topic in Section 5.

In some cases, speakers may be faced with two sets of intended addressees who not only differ in their background knowledge and perspective, but will differ *dramatically* in these respects. In such situations, speakers may be forced to convey simultaneously one message to one audience and a different message to another audience. This situation has been dubbed the *multiple audience problem* by John Fleming and John Darley (1991; 1990; Fleming, 1994), who found that high school students can formulate messages to communicate one meaning to their peers and another to their parents. The students accomplish this by relying on teen slang and specialized knowledge unfamiliar to their parents. The problem is a simple one when subjects are permitted to employ prearranged signals, but subjects in these experiments show some ability to coordinate on an implicit interpretive context without prior agreement. It remains to be seen whether similar findings will be obtained with other types of mixed audiences are present, or when the solution to the problem is not as easy as reliance on in-group language.

4.3.5 Other Components of Perspective.

Studies of perspective taking have focused almost exclusively on referential communication, and the kind of reference involved typically has been to concrete things or nonsense figures. Researchers have exploited this technique to examine a variety of complex aspects of the communication process, but the task itself strongly constrains the content of communication. In such situations, communication tends to be concrete rather than abstract, literal rather than figurative, concerned with sensory data rather than beliefs or feelings, with matters that are public rather than private. Discussion of perspective-taking in the

communication of abstract concepts is rare, although there is some reason to believe that this domain may yield important insights.

Much talk with others concerns affective information — attitudes, evaluations, opinions, feelings, etc. To communicate effectively about such content, communicators probably take a variety of factors in addition to their addressees' knowledge and beliefs into account. Apart from the work by Higgins and his colleagues (e.g., Higgins & Rholes, 1978; Higgins, McCann, & Fondacaro, 1982; McCann et al., 1991), the topic has received little attention. Note that in these experiments, speakers were specifically informed of their addressees' attitudes, but in much conversation, these components of perspective must be inferred.

4.3.6 Perspective-taking and interaction goals

Earlier (Section 3.3.5) we observed that little consideration had been given to the question of how a speaker's perlocutionary intentions interacted with the an utterance's form. The problem is complicated by the fact that speakers often try to accomplish more than one thing with an act of speaking (e.g., to convey information and to initiate a social relationship), and the particular locution will reflect what the speaker is trying to accomplish.

Interaction goals also can influence how a listener's perspective is reflected in message formulation. For example, the extent to which speakers adjust a description of a target person to reflect the addressee's attitude toward that target is dependent on the speaker's and addressee's relative statuses, at least for speakers who are high in authoritarianism (Higgins & McCann, 1984). When the speaker and addressee are of the same status, high and low authoritarians adjust their descriptions in the direction of the addressee's opinion about the same amount. But when the addressee's status is higher, high authoritarians increase the extent of such adjustment, while the descriptions of low authoritarians remain the same. Higgins and McCann interpret this difference as a reflection of differences in high and low authoritarians' interaction goals.

4.3.7 Hearers' Use of Speakers' Perspectives

A criticism of Intentionalist models was that they focus predominantly on the listener's side of the communicative process. The complementary criticism can be raised for Perspective-

taking models: Despite the intention of the model to encompass both speaking and comprehending, overwhelmingly the work to date has examined the speaking side of the process. Only a handful of studies deal with perspective-taking in message comprehension. Fussell (1991) found that the interpretation of personality metaphors depended upon the perception of the speaker's attitude toward the person being described. In their study of demonstrative reference, Clark and his colleagues' (1983) found that hearers assumed speakers intended Ronald Reagan when the message was "you know who this man is, don't you?" and David Stockton when it was "do you have any idea whatsoever who this man is?" Although it was not tested explicitly in this study, it is clear that the addressee's interpretation of the utterances was dependent upon a model of the speaker's background knowledge. In our study of everyday objects (Fussell & Krauss, 1992) we observed that listeners who were knowledgeable in a particular domain often asked confirming questions when novice speakers used the objects' names, presumably to be sure the speaker knew what he or she was talking about. Such observations need to be examined systematically.

5. DIALOGIC MODELS

5.1 Introduction

Each of the three models we have discussed explains interpersonal communication in terms of participants' individual acts of production and comprehension. It is a speaker's task to produce utterances that will adequately convey a particular meaning; it is the addressee's task to process these utterances, and by so doing to identify the speaker's intended meaning. Clark and Wilkes-Gibbs (1986) have dubbed such a conceptualization a "literary model" of language use. However, many modern literary theorists think about the process by which texts convey meanings in considerably more subtle and complex ways (cf., Eagleton, 1983). Consider the following observation by the influential Russian philosopher and literary critic, Mikhail Bakhtin.

> Verbal interaction is the fundamental reality of language. Dialog, in the narrowest sense of the term, is but one form, albeit the most important to be sure … But dialogue can be understood in a broader sense, meaning by it not only direct … communication between

> two persons, but also all verbal communication, whatever its form (as quoted in Todorov, 1984, p. 113).
>
> The utterance is constructed between two socially organized persons, and, should there not be present an actual interlocutor, one is presupposed in the person of the normal representative…of the social group to which the speaker belongs (as quoted in Todorov, 1984, p. 101).

Underlying Bakhtin's view is the assumption that face-to-face interaction (or conversation) is the primary site of language use.. It undoubtedly was the context in which language evolved, and it is universally the context in which it is learned.[25] Use of language in other circumstances (electronic mail, novels, television newscasts, etc.) derives from conversational language use, but is different in several important respects. The features that shape the nature of conversation are (1) the *real-time* constraints on production and comprehension under which participants in conversations operate, and (2) the *responsiveness* that face-to-face interaction affords.

Producing spontaneous speech requires the speaker simultaneously to perform two cognitively demanding tasks: conceptualizing what is to be conveyed, and formulating a linguistic structure that is capable of conveying it (Levelt, 1989). Conversational speech is fundamentally different from rehearsed speech and from messages that are written. Conversational speech must be produced in a reasonably continuous stream, and there is little opportunity for speakers to reconceptualize the content, consult a "mental thesaurus" for a word that will express the precise nuance of meaning intended, experiment with alternative syntactic structures, etc., as might be done by someone composing a written message

Similarly, from the listener's point of view, speech is evanescent. Once it has been produced, it must be processed and comprehended. One cannot process at a slower rate when a complex syntactic structure is encountered, go back and review what was said earlier, underline or make marginal notes, etc., as might be done by a reader. Because conversational speech is produced at a rate of about 2.5 words per second, production and comprehension could pose

formidable problems for two completely autonomous information processors. Yet, participants typically come away from conversations believing they have communicated successfully, and objective evidence probably would indicate that they have.

One reason people are able to communicate as well as they do in such adverse circumstances is that the exquisite responsiveness of conversation (and similar interactive forms) permits them to formulate messages that are closely attuned to each others' immediate knowledge and perspectives, and thereby reduce the cognitive demands of production and comprehension. The participant who at a given moment occupies the role of speaker can determine virtually instantaneously whether the addressee has identified communicative intentions correctly. Simultaneously the addressee can reveal the nature of his or her understanding as it develops, and in this manner guide the future production of the speaker.

Examination of what is said in real conversations, particularly conversations in which the participants are intently involved, suggests that grammatically-well-formed utterances and felicitously accomplished speech acts are relatively rare. Often sentences trail off inconclusively or are left dangling incomplete, listeners interrupt to ask questions, interject comments and finish sentences, topics change abruptly and unpredictably, and what is left unsaid may convey more than what is explicitly stated. It is an unusually articulate person who is able to read a transcript or listen to a recording of his or her spontaneous speech without being struck by its incoherence and lack of fluency. However, it is a mistake to regard such conversational speech as a defective version of some ideal form. Rather, these apparent deficiencies reflect the way conversation operates as a communicative process.

What we will call *Dialogic* models take conversational speech as the model for communication. From this perspective, a communicative exchange is not the combined outputs of two autonomous information processors, but rather a joint accomplishment of the participants, who have collaborated to achieve some set of communicative goals. Individual contributions can't be defined apart from the interaction situation. From the Dialogic perspective, meaning is

"socially situated" -- deriving from the particular circumstances of the interaction -- and the meaning of an utterance can be understood *only* in the context of those circumstances.

An important way in which Dialogic models differ from those previously discussed is their view of the goals of participants in communication. Despite their many differences, all of the three models we discussed earlier assume that people communicate to convey information. But for Dialogic theorists the goal of communication is the achievement of *intersubjectivity.* Information exchange does, of course, occur, but as a means of reaching the intersubjective state. The general idea of intersubjectivity (although perhaps not the term itself) has broad historical resonances within social psychology. Indeed, some social psychologists regard the human ability to establish intersubjectivity as the foundation upon which the social order rests.

The Norwegian social psychologist Ragnar Rommetveit may have been the first to apply the concept specifically to communication. In his seminal essay "On the architecture of intersubjectivity," he developed the thesis that even the simplest communicative act rests upon the participants' mutual commitment to "…a temporarily shared social world" (1974, p. 29). In Rommetveit's view, intersubjectivity is a structure that emerges from the process of interaction. It is neither implicit in the knowledge participants bring to the situation, nor is it explicitly coded in language. "Mutual understanding can[not] … be accounted for in terms of either unequivocally shared knowledge of the world or linguistically mediated meaning" (1980, p. 109). Rather, for each interaction it must be constructed anew. Out of the divergent social realities participants bring to the situation, intersubjectivity is fashioned and continually modified by acts of communication. In this way, "…what is made known by what is said is affected by what is tacitly taken for granted, and *vice-versa"* (Rommetveit, 1980, p. 76).

Within psychology, the most fully articulated example of a model of communication from the Dialogic perspective is Clark's "collaborative model" (Clark & Brennan, 1991; Clark & Schaefer, 1989; Clark & Wilkes-Gibbs, 1986; Isaacs & Clark, 1987) . Because the model is well specified, and because Clark and his associates have been so active in pursuing the collaborative model's empirical implications, it will be the primary focus of our discussion of the Dialogic

perspective. However, it should be kept in mind that the collaborative model is only one of many possible formulations of an approach that takes as its point of departure the interactive nature of communication.

The fundamental premise of the collaborative model is that communication consists of more than a sequence of messages produced by the participants; rather, it emerges from the process by which speakers and addressees come to agree that those messages have been understood. As Clark and Brennan (1991) observe, collaboration is intrinsic to many forms of human interaction:

> It take two people working together to play a duet, shake hands, play chess, waltz, teach, or make love. To succeed, the two of them have to coordinate both the content and process of what they are doing...Communication, of course, is a collective activity of the first order.

The collaborative processes required to create shared meanings are viewed as essentially similar to those that underlie other forms of coordinated behavior.

On important influence on Clark's thinking has been a subfield of sociology specializing in the microanalysis of communicative interaction called *conversational analysis,* a branch of ethnomethodology. Ethnomethodologists focus on the common-sense knowledge people invoke to explain and regularize social behavior -- the "artful practices," in Garfinkel's (1967) term, that people use to obscure the chaotic reality that constitutes social life (e.g., Sacks & Schegloff, 1979; Schegloff, 1972). The central goal of conversational analysis is to describe and explicate the competencies that ordinary speakers use and rely on when they participate in intelligible, socially organized interaction. As Atkinson and Heritage put it, "Conversational analytic studies are…designed to achieve systematic analyses of what, at best, is intuitively known and…tacitly oriented to in ordinary conduct" (Atkinson & Heritage, p. 4). Unfortunately, despite the fact that conversational analysis deals with a number of topics of great interest to social psychologists, there has been little contact between the two fields.[26] Many of the conversation analysts'

theoretical ideas have been formulated in psychological terms by Clark and Wilkes-Gibbs (1986) in their collaborative model.

5.1.1 Collaborative Communication

A conversation can be viewed as a series of discursively-related messages. According to Clark and Wilkes-Gibbs (1986), speakers and hearers take pains to ensure that they have similar conceptions of the meaning of each message before they proceed to the next one. The collaborative model is specifically addressed to the problem of establishing definite reference (see Sections 3.2.1 and 4.1.2). Clark and Wilkes-Gibbs contend that a successful act of reference has two phases: *presentation,* in which an utterance is produced, and *acceptance,* in which the participants come to agree that the message has been understood. Both phases are viewed as collaborative in nature.

Presentation phase

Clark and Wilkes-Gibbs describe the feedback-eliciting strategies we have discussed previously in Section 4.2.2 under perspective-taking (try-markers, installment phrases, pre-sequences, etc.) as devices *pairs* of communicators use to coordinate meaning. Speakers can actively solicit the addressees' help in constructing an utterance, for instance by encouraging spontaneous completions, as in the following example:

A: Then I went to speak to Tom um...

B: Smith?

A: Yes. About the meeting next week.

In a large corpus of natural conversations, Clark Wilkes-Gibbs (1986; Wilkes-Gibbs 1992, June) found widespread use of spontaneous completions, as well as other interactive forms of reference. Completions themselves are negotiated products: Speakers can accept or reject the suggested term, as demonstrated in the following exchange from the Wilkes-Gibbs corpus (1992, p. 4):

A: It's a huge finding. It over...what's the word...

B: Rides.

A: No, um..uh..

B: Shadows.

A: Right. All the rest.

B: Amazing.

Wilkes-Gibbs notes that speakers sometimes appear to use the strategy of hesitating to induce the listener to provide a completion, as for instance when unable to recall another's last name (e.g., "Sure I recognize you. You're John um...")

Acceptance phase

Once an utterance has been proposed, speaker and addressee interact to ensure that they mutually agree it has been understood correctly. Clark and his colleagues (Clark & Brennan, 1991; Clark & Schaefer, 1989; Clark & Wilkes-Gibbs, 1986) refer to this process as *grounding*:

> The contributor and his or her partners mutually believe that the partners have understood what the contributor meant to a criterion sufficient for current purposes. This is called the *grounding criterion*. Technically, then, grounding is the collective process by which the participants try to reach this mutual belief (Clark & Brennan, 1991, p. 129).

In order for a statement to become a contribution to the ongoing conversation, and thus to be incorporated into the communicators' common ground, it must first be grounded.

The process of grounding an utterance can be more or less complex and/or time consuming, depending upon its comprehensibility to the listener and the goals of the communicators (Clark & Brennan, 1991; Clark & Schaefer, 1989; Clark & Wilkes-Gibbs, 1986; Schegloff, 1982; Schegloff, 1991; Schegloff, Jefferson, & Sacks, 1977). Some messages are understood and accepted immediately, either explicitly, as in:

A: Have you heard of the movie *Schindler's List*?

B: Uh huh.

A: I saw it last night and it was quite a tear-jerker.

or implicitly, as in:

A: Last night John and I saw *Schindler's List.*

B: Did you like it? I saw it last week and was really moved.

In Clark and Brennan's terms, backchannel responses that indicate comprehension (e.g., "mhm," "I see,"), overt statements of understanding, and moving on to the next turn without showing any indication of not understanding are all "positive evidence" of sufficient grounding.

In contrast, listeners may sometimes indicate they have not understood the message, or that they are not certain that their interpretation is correct. These forms of "negative evidence" can also take the form of backchannel responses (e.g., "huh?"), overt questions, and misplaced or erroneous contributions. These backchannel signals can initiate repair techniques, such as side-sequences:

A: Last night John and I saw *Schindler's List*.

B: The movie about the Holocaust?

A: Yep.

B: How did you like it?

The embedding of side-sequences need not be limited to two levels, and can become quite complex (Jefferson, 1975). According to the collaborative model, regardless of the number of turns required, communicators will continue to try to establish that mutual understanding has occurred.

5.1.2 The Principle Of Least Collaborative Effort

The maxims of quantity and manner (Grice, 1975) ordain that messages should contain the right amount of information for the addressee, and be as concise as possible. The perspective-taking literature indicates that speakers do in general follow these maxims, although apparent violations are not uncommon. For example, Fussell and Krauss (1992) found that speakers would often present little or no identifying information along with the name of a stimulus, despite their belief that it was unlikely that the addressee could identify it from the name alone. Such findings suggest that speakers do not adhere strictly to Grice's maxims.

Why might this type of maxim violation occur? According to Intentionalists, providing one's addressee with too little information to identify a referent could be understood as a

deliberate act designed to convey something to that addressee (e.g., that the speaker is being rude, that the addressee is poorly informed, etc.). An alternative view is that Grice's conversational maxims really are not very conversational in their view of language. Rather they describe language use without taking into account the interactive nature of interpersonal communication. Clark, Wilkes-Gibbs and their colleagues propose that speakers and hearers strive to minimize their *collective* effort in the grounding process. In this view, it would be perfectly acceptable (i.e., not a maxim violation) for a speaker to present a potentially ambiguous message, instead of a lengthier but more communicative one, when less overall grounding time would be required by having the listener disambiguate the latter message.

5.2 Research Findings

In their research, conversational analysts take segments of naturally-occurring speech and transcribe them precisely -- retaining as much detail of the original material (e.g., pauses, dysfluencies, intonations) as possible.[27] Psychological research guided by the collaborative model has employed variants of the interactional referential communication paradigm. In one variation, Clark and Wilkes-Gibbs (1986) had speaker and hearer, separated from one another by a barrier, to converse without constraint about stimuli, creating a conversational setting that contains many of the elements of everyday conversation, but still allows for considerable experimental control. Consistent with their assumption that communication, is achieved jointly by speaker and addressee, researchers in the collaborative framework examine *joint* measures of communicative success, such as the total number of words spoken or total time needed by both parties to the conversation before they have agreed that successful reference has occurred.

5.2.1 Developing Shared Perspectives

The number of conversational turns (presentation, acceptance, side-sequences) speakers and addressees require in any particular instance to establish that a message has been understood can vary widely. In the collaborative view, changes in this measure reflects the extent to which speakers and hearers have established a joint perspective. Several studies have demonstrated both that speakers' referring expressions become shorter with repeated reference to a stimulus,

but also that the total number of speaking turns by *both* participants required to establish reference declines over subsequent encounters with the referent. This is found when the stimuli are nonsense figures (e.g., Clark & Wilkes-Gibbs, 1986; Hupet et al., 1991; Wilkes-Gibbs & Clark, 1992) and when they are actual persons, places or things (e.g., Clark & Schaefer, 1987; Fussell & Krauss, 1992; Isaacs & Clark, 1987; Schober & Clark, 1989).

Creating shared spatial perspectives

In earlier sections of the paper we discussed work on spatial perspective-taking, and in particular, how consideration of the addressee's viewpoint affects the way a speaker communicates about entities and locations in a shared visual field. Several investigators have examined how conversational partners create a joint perspective for spatial reference.

Garrod and Anderson (1987) had dyads play a computerized maze game that required them to refer to specific locations. They found a correlation between the relative use of particular locative strategies (e.g., path vs. coordinate systems) between each pair of partners, but not across partners, suggesting that dyads had developed a joint spatial perspective on the maze. Interestingly, attempts to coordinate perspectives explicitly (e.g., "Let's describe them in terms of the maze coordinates,") were rare; instead, coordination was achieved through the act of referring itself.

Garrod and Anderson suggest that communicators use "output/input coordination" -- speakers formulate messages using the mental model of the space that was used in the previous message. In this way, they argue, cognitive effort is minimized because communicators do not need to assess others' perspectives. However, research by Schober (1993, 1992) suggests that communicators cooperate in the *style* of reference they use to refer to physical locations, rather than in their specification of those locations. In his studies, when pairs of communicators exchanged speaking roles, the new director tended to use egocentric or addressee-centered references at about the same rate as the original director had.

Creating shared conceptual perspectives

As Schober (1990; 1993) observes, it may be easier to construct mutual orientations toward a physical space than it is to create shared conceptual perspectives, because in the former the addressee's point of view can more readily be identified. In addition, although there is a conceptual element in spatial perspective-taking -- different ways of referring to points in a maze may indicate different ways of representing that maze in space -- typically there will be little disagreement about the referred-to entity (e.g., a point). In contrast, many communication tasks require that speakers and hearers develop a mutual perspective on both the object of reference and its location in space, and in some cases, there may be no conventionalized lexical entry for the object. In other cases, speakers and listeners may bring different knowledge and perspectives on the referent to their interaction. Researchers have examined the development of joint perspectives in both of these cases.

Creating shared perspectives on unlexicalized referents

Several investigators have examined the construction of shared perspectives or interpretations with Chinese Tangram figures (see Figure 2, Panel B). Clark & Wilkes-Gibbs (1986) had pairs of subjects perform an interactive referential communication task, and examined message content and the length of exchanges across repetitive trials. Interactions became briefer with subsequent mention. During the first trial, subjects described, rather than named, the stimuli, employing four descriptive strategies: *resemblance* (e.g., "looks like a skier"), *categorization* ("is a skier"), *attribution* ("has skis") and *actions* ("person skiing"). On the first trial, the majority of speakers used a combination strategy: they gave a holistic label to the stimulus, but added literal details to facilitate coordination of meaning. With repeated mention, referring expressions are simplified and shortened by eliminating details (e.g., "person with snowshoes carrying skis" might be shortened to "skier"), or focusing on a particular part of a figure (e.g., "person carrying skis" might be shortened to "skis").

Collaborative models predict that addressees' coordination strategies will also change across trials. During the initial trials, matchers in the Clark and Wilkes-Gibbs (1986) often

requested expansion of the information directors presented, and frequently proposed additional details to ensure understanding. By the sixth trial, however, the directors' presentation was usually accepted without comment. Similar results have been found by a number of investigators (e.g., Fussell & Krauss, 1992; Hupet et al., 1991; Isaacs & Clark, 1987; Schober, 1993; 1994; Wilkes-Gibbs & Clark, 1992).

Hupet et al. (1991) have shown that the amount of effort required to achieve a shared perspective depends on the codability and discriminability of the referent. When codability and distinctiveness were high, Hupet et al. obtained results that paralleled those of Clark and Wilkes-Gibbs (1986). However, when either of these factors was low, much more interaction was required to establish that referents had been identified correctly. By the sixth trial, dyads in all conditions of Hupet et al.'s study were equally proficient at describing the Tangrams, suggesting that, once established, a joint perspective is relatively easy to maintain, even with confusable stimuli.

The collaborative process is also influenced by the extent to which communicators bring similar personal perspectives on the stimuli to the communication situation. Wilkes-Gibbs and Kim (1991) examined the negotiation of perspective in a referential communication task patterned after Carmichael, Hogan and Walter's (1932) classic study of the effects of naming on memory. Wilkes-Gibbs and Kim created a set of ambiguous Tangram-like figures that could be seen as different objects (e.g., "a camel without legs," or "a barn with a silo," see Figure 4). In half of the dyads, Wilkes-Gibbs and Kim induced the same perspective prior to the communication task, and in the other half the two participants had different perspectives. When the two communicators differed in their prior perspectives, grounding was much more difficult and time consuming. Nonetheless, as in Hupet et al.'s (1991) study, all pairs were able eventually to construct a shared perspective.

Insert Figure 4 About Here

Creating perspectives on lexicalized referents

Even when objects or concepts are lexicalized, speakers and hearers need to coordinate on whether they will use names, descriptions, or a combination of the two, and on the level of specificity of the names they use. Collaborative processes are fairly straightforward when the communicators share substantial background knowledge, but may be more complex and time-consuming when participants have unequal expertise in a particular domain. One strength of the collaborative model is its ability to account for certain conversational phenomena that occur under such circumstances. Not only do knowledgeable speakers tailor their messages to their addressees' perspectives, they also collaborate to ensure that both participants possess the same expertise, at least insofar as the task at hand is concerned.

For example, Isaacs & Clark (1987) found that subjects who were familiar with New York City frequently took an active role in teaching novices the names of the landmarks that were the topic of their communication. When directors had greater expertise, they tended to begin by using the building's name plus a description, and then began eliminating the descriptive information on repeated occasions of mention. This finding is inconsistent with a straightforward Perspective-taking account, which would predict that descriptions alone would be used for all the trials, since the names would be uninformative to the addressee. Similarly, when matchers had greater expertise than directors, they often facilitated the discussion by introducing the name of the landmark.

Not only do speakers modify their presentation strategies across trials, they also adapt them to their matchers' needs within a single trial. In Isaacs and Clark's (1987) study, experts on New York City were able to assess their partners' familiarity with the city within the first few exchanges of the first trial, and would modify their presentation strategies accordingly. Schober (1994) also found that speakers' strategies for describing spatial locations shifted somewhat during the first trial when the matcher did not share the director's vantage point.

Collaboration is addressee-specific

Collaborative models predict that the shared perspectives communicators develop during the course of a conversation will be tailored to their own needs, and may not be comprehensible by others. In support of this prediction, Stellmann and Brennan (1993) found that speakers who had developed a mutual perspective on Tangram figures with one partner would begin the grounding process anew when they repeated the task with a second partner. In most cases, the prior perspective was the one a offered by the speaker (and typically accepted by the second partner), but perspective was introduced to the new partner as a description rather than a label. When speakers were re-paired with their original partners, they tended to use the names or descriptions they previously had used with that partner.

Although directors must develop a new collaboration with each new partner, the participatory status of the partner in earlier conversations is a determinant of the collaborative strategy. Wilkes-Gibbs and Clark (1992) had pairs of subjects perform a two phase referential communication task. directors first communicated about Tangram figures with one partner, and then performed the same task with a *new partner*, who had not been present during the first phase; a *side-participant*, who heard the earlier conversation and saw the figures; a *bystander*, who heard the earlier conversation but could not see the figures; or an *"omniscient" bystander*, who both saw the stimuli and heard the earlier conversation via an audio-visual link. Director's messages took into account the second partner's status in the earlier conversation. For example, when the second partner had not been present or was a bystander during Phase 1, messages tended to be long, consistent with the notion that these pairs had not established a body of common ground that would make previous referring expressions usable.

There is good reason to believe that directors' strategies during Phase 2 of the Wilkes-Gibbs and Clark's study affected the matcher's understanding. Schober and Clark (1989) examined comprehension by addressees and overhearers in a similar task, and found that overhearers identified the intended referents significantly less accurately, especially when they had not heard the entire conversation between director and matcher. Similar findings have been

reported by Kraut, Lewis and Swezey (1982). Schober and Clark suggest that overhearer's poorer understanding stems from several sources. First, people come to a conversation with different background knowledge, and an overhearer whose background knowledge differs markedly from the that of the addressee is likely to have problems understanding message tailored to that addressee's perspective. Second, overhearers who enter in the middle of a conversation will lack the shared knowledge the participants have accumulated. Most importantly from the collaborative perspective is that overhearers have not been involved in the active construction of the utterance, and therefore, the utterance is not grounded for them. Dyads may decide an utterance is suitably grounded, and move on to the next utterance before an overhearer has understood the message.

Just as communicators adapt their collaborative procedures to take addressee's prior status into account, they can also adapt their current messages to take into account unintended and unwanted overhearers. People often discuss matters they would prefer to keep confidential in public places. In such cases, collaborative strategies may be considerably more complex. Clark and Schaefer (1987) investigated pairs of acquaintances' referring expressions for Stanford buildings in the presence either of a person from whom they had to conceal their message, or someone who was indifferent to what they were saying. Subjects used a variety of strategies, often drawing upon private knowledge, to obscure their message. Concealment made the collaboration process much more difficult and time consuming, but it became easier over trials. However, overhearers correctly identified the building about half of the time, suggesting that it was difficult for the dyads to judge how successful their concealment had been.[28]

5.3 Issues and Limitations

The Dialogic perspective stresses the ways in which meaning is socially situated, and its emphasis on the interactive nature of communication is appealing. Research motivated by this perspective has done much to broaden our understanding of the mechanisms that make communication possible, but, before it can offer a comprehensive account of interpersonal communication, a number of issues need to be addressed in specifically Dialogic terms. Some of

these have been noted in our earlier discussion of Perspective-taking models: the focus on reference to concrete objects, and the lack of research on multi-party conversations in which all individuals are intended addressees. Here we raise two issues that are particularly germane to a Dialogic approach..

5.3.1 Grounding errors

As speakers and hearers collaborate, they often find that one or the other has made a mistake of some sort -- errors in word choice, intonation contour, hesitations, and the like. Psycholinguistics has focused on the cognitive sources of these errors, and the strategies speakers use to correct them (see Clark, 1987; Gibbs, 1983). In conversational analysis, however, Schegloff and his colleagues have described the procedures used by both speaker and addressee to "repair" specific types of speech errors and thereby maintain common ground (Schegloff, 1982; 1991; Schegloff et al., 1977). Consistent with their theoretical stance, ethnomethodologists have not explored the psychological underpinnings of errors and their corrective mechanisms.

A Dialogic model hold that momentary errors in understanding must be corrected before the conversation moves forward. Indeed, there is a sense in which viewing them as errors is inconsistent with a Dialogic point of view, since it implies an individualistic conception of meaning. In the Dialogic view, an utterance has no meaning until the participants have ratified it. So in a situation like the Isaacs and Clark experiment, a listener who does not know the meaning of "the Chrysler building" (i.e., who does not know what the Chrysler building looks like, and therefore cannot identify a picture of it) can ask for more information. Indeed, it is the *responsibility* of both speaker and addressee to ensure that successful communication has occurred, and an error can occur only if the pair proceeds to the next topic without adequately grounding the previous one. Of course, such errors do occur, and when they do they induce a processes of retroactive reinterpretation (Fox, 1987).

Recent research by Kreuz and Roberts (1993) suggests that social perceivers judge both speakers *and* hearers negatively when errors in grounding occur. Unlike phonological and

lexical errors, such errors, (called *pragmatic errors* by Kreuz and Roberts) are not attributable solely to the speaker. Rather, they appear to stem from a combination of factors: the failure of a message to satisfy a conversational maxim (e.g., the messages is not sufficiently informative), and the addressee's failure to make it known to the speaker that such a failure has occurred. Only the speaker is held responsible for phonological and lexical errors, but Kreuz and Roberts found that *both* participants were judged negatively when pragmatic errors occurred. In fact, the listener was judged even more negatively than the speaker.

5.3.2 Individual and Socio-cultural Differences in Collaboration

Most of the research we have discussed has used college students as subjects. Research on the generalizability of the model, and particularly on communicators' grounding strategies, is sorely needed. The meager evidence available suggests that populations may differ in the grounding strategies they employ. Hupet et al. (1993) examined the communication performance of students and elderly adults, using a task on which the speaker and listener role was alternated. Although both subject groups showed the characteristic decline in number of words and speaking turns per figure across the six trials, the older adults required significantly more words and turns. Hupet et al. were able to rule out a number of factor that might account for their findings -- the two groups did not differ significantly in verbal skills, nor did the types of queries received from the addressee differ, etc. However, they did find significant differences in the directors' first turns in Trial 2: Whereas younger adults' descriptions of each Tangram tended to be based at least in part on the description they had grounded in Trial 1, about a quarter of the elderly subjects provided a totally new name or description.[29]

Even within college student samples, there appear to be differences in collaborative styles. Clark and Schaefer identified two subgroups whose strategies of concealing their meaning from overhearers differed substantially. One group settled on a private referring expression immediately, while the other switched the basis for their expressions (i.e., the piece of private knowledge) from trial to trial. Not surprisingly, the latter group found coordination more problematic.

5.3.3 Distinguishing collaborative from noncollaborative processes

Dialogically-oriented models like Clark's view individual communicative behaviors in terms of their contribution to the joint accomplishment of the participants. Of course, not all of the participants' behaviors are part of the collaborative process. Participants in conversations may simultaneously walk yawn, scratch themselves, toy with a paper clip, etc., and it would make little sense to argue that everything a participant does is *ipso facto* in furtherance of their joint communicative effort. The problem is distinguishing between what is and is not part of the collaborative process.

This becomes an issue when we consider a variety of speech-related phenomena that are not ordinarily regarded as part of an utterance's intended meaning. For example, consider the following answers to the question "When was Abraham Lincoln born?"

(1) "Lincoln was born around 1820."

(2) "Lincoln was born around…uh…1820."

An Intentionalist analysis would assume that (1) and (2) had the same *intended* meaning, although the addressee might conclude, based on the hesitation, that the speaker in (2) was less certain about Lincoln's birth date. Suppose the speaker had said

(3) "This is only a guess, but I think Lincoln was born around 1820."

Do (2) and (3) have different intended meanings? An Intentionalist analysis would say they did—that in (3) the speaker's lack of certainty was part of the intended meaning, while in (2) the uncertainty was a conclusion based on an inference external to the intended meaning. Now consider sentence (4).

(4) "Lincoln was born around…uh…1820?" (with rising intonation)

Do (2) and (4) have different intended meanings? Intentionalist theorists have not discussed the role of paralanguage in the construction of intended meanings very extensively, but our guess is that, if pressed, they would say that by using a rising intonation the speaker in (4) has made uncertainty part of the intended meaning.

However, a Dialogic model might disagree. For example, with respect to answering questions, Smith and Clark note the Gricean maxim of quality ("Do not say that for which you lack adequate evidence"), and suggest that

> "…when respondents aren't certain of their answer, they should say so, or they will imply that they *are* certain."
>
> …respondents use "uh" both to signal a delay and to offer a brief account for it. In this view, "uh" is not merely a filled pause… It is a deliberate signal chosen from a range of interjections that include "uh," "um," "hm," "mm," and the tongue click "ts" (Smith & Clark, 1992, pp. 26).

But if "uh" and "um" (both usually thought of as dysfluencies) are "deliberate signals," can the same be said of other dysfluencies? Speech often contains unfilled pauses, repeated words and syllables, and a variety of other indicators that the engine of speech production is malfunctioning. Are these signals as well? Of what? If filled pauses are signals, what do we make of the finding that lectures in the humanities contain about twice as many dysfluencies as lectures in the sciences (Schachter, Christenfeld, Ravina, & Bilous 1991)? Are humanities instructors subtly alerting their students to violations of the Gricean maxims?

We believe it is more useful to distinguish signs from symbols, and to regard speech dysfluencies as signs—signs of (among other things) difficulties the speaker has encountered in the speech production process.[30] The problem may be encountered at the stage of conceptualization (e.g., the speaker is having difficulty formulating the conceptual content of what is to be conveyed) or at the stage of grammatical encoding (e.g., the speaker can't access the word that adequately expresses that conceptual content), or it may stem from other problems (distraction, fatigue, etc.). Participants in conversations may or may not attend to such signs, depending on their interaction goals, among other things. And they may or may not make inferences from the signs, and use that information in the interaction.

To regard such signs as part of the participants' collaborative effort, one must assume that participants have the same goals, something that often is not the case. Although *communication*

may be a collaborative process, people often employ communication to accomplish ends that are anything but collaborative. People sometimes violate the maxim of quality by saying things they know not to be true, intending that their addressee belief the known-to-be-untrue proposition. In the vernacular, such speakers are said to be *lying* or attempting to *deceive* the addressee. While they may collaborate with their addressee to communicate, their goal in the situation—the state they want to achieve through communication—certainly is not shared by the addressee.

Lying sometimes is accompanied by subtle changes in speech. For example, speakers' voice fundamental frequency may be elevated when they say things they know to be untrue (Streeter, Krauss, Geller, Olson & Apple, 1977). Similarly, Chawla and Krauss (1994) had professional actors try to appear spontaneous while articulating speech they had rehearsed. Spontaneous and rehearsed speech differed subtly in the location of dysfluencies. It makes little sense to regard such signs as intentional, or part of the collaborative process, since they undermine the very outcome the speakers are trying to achieve. As we noted in Section 3.3.4, a participant's behavior will reflect both illocutionary and perlocutionary intentions. In many cases the signs we have been discussing derive from speakers' perlocutionary intentions, and may provide a knowledgeable observer with information about what a contribution is intended to accomplish, rather than what it is intended to mean.

6. CONCLUDING COMMENTS

We have reviewed a sizable and remarkably diverse body of literature concerned with the social psychology of interpersonal communication. Our focus has been the implicit and explicit assumptions that underlie different approaches to the topic, and we have formulated these assumptions in terms of four models of communication. As with any category system, the justification for ours is pragmatic, based on the extent to which it help us understand the similarities and differences among the approaches investigators have adopted. Of course, category systems inevitably tend to blur differences among instances of the same category and to exaggerate dissimilarities among instances of different categories. We are aware that we have grouped together studies that in some important respects are quite different Also, because of

limitations of space, or because the work did not lend itself well to discussion in our format, some relevant work has been omitted, or examined in scant detail. Selectivity is unavoidable in reviewing any sizable content area, but with a topic as multifaceted as communication it becomes a formidable problem. Some readers no doubt will feel that we have given short (or no) shrift to critically important work, and included items of dubious significance or quality. Certainly we have not done this intentionally, but faced with the charge we probably would plead *nolo contendere.*

It would be a serious misreading of our thesis to interpret what we have written as an endorsement of one type of model over another -- as saying that one provides a better account of interpersonal communication than another does. The four models differ markedly in the kinds of phenomena they have been designed to address, and each provides a serviceable account of the phenomena that fall directly within its focus. Moreover, each model takes a s a given the operation of processes described by other models . Collaborative models, for example, locate meaning within the interaction rather than within the message, but they also regard try markers, installment noun phrases, and the like as signals that are used to elicit feedback from the addressee. Presumably such linguistic devices *encode* the information that a response is appropriate, although Collaborative theories do not describe the encoding-decoding process in any detail. Hence, while each of the models offers important insight into some aspects of interpersonal communication, each also has a number of limitations when it comes to dealing with other aspects.

6.1 Developing Comprehensive Models

In this section, we will discuss briefly some of the open issues a social psychology of interpersonal communication must address.

6.1.1 Identifying the Social Context

All of the approaches we have discussed take as a given that communication is fundamentally a social process, but they conceive of the social context of utterances in an exceedingly narrow fashion. With few exceptions, researchers have focused on the immediate

conversational context, and ignored the wider social context in which the interaction is set (Sarangi & Slembrouck, 1992).

There is reason to believe that many elements of the broader social context affect both the form and content of messages. In his listing of contextual factors (see section 3.1.3), Lyons (1977) includes social roles, time and place of interaction, formality, style of speech, conversational topic and situational domain. Most of these facets of the social context have yet to be incorporated in communication models. To note just one factor, few investigators have examined how the formality of the situation or the relative status of interlocutors affects the communicative process, although there is reason to believe these factors can have striking consequences. We would expect workers to go to greater lengths assessing a supervisor's perspective than the supervisor would in assessing theirs. And, as Sarangi & Slembrouck (1992) point out, the extent to which the negotiation of meaning is "collaborative" can depend on the relative status of the communicators.

Not surprisingly, sociolinguistically-oriented models have gone considerably farther than the models we have reviewed in incorporating a variety of dimensions of the wider social context. For example, speech accommodation theory (Coupland, Coupland, Giles, & Henwood, 1988; Giles, Mulac, Bradac, & Johnson, 1987; Thakerar, Giles, & Cheshire, 1982) has attempted to delineate the social variables that determine the way interactants adjust their speech to match that of their partners. To date, the theory consists mainly of a listing of relevant variables, with little description of the dynamic process by which interactants accommodate. Regrettably, there has been relatively little cross-fertilization between sociolinguistically-oriented models and models of the sort we have described.

6.1.2 Nonlinguistic Aspects of Meaning

A comprehensive account of interpersonal communication must explain how nonverbal and verbal information work in concert to create meaning. Much of the research we have discussed either ignores nonverbal sources of information or focuses on nonverbal and paralinguistic cues as *signs* rather than symbols (see Section 1.2). For example, Clark and

Wilkes-Gibbs (1986) discuss addressees' use of head nods and the like to indicate comprehension.

By neglecting nonverbal and paralinguistic signs and symbols, researchers may overlook important components of the processes they examine. The taking of another's perspective, for example, can be revealed not only in the words the speakers utter, but also in their tone of voice and facial expression. A speaker relating bad news will convey an appreciation of the addressee's perspective by selecting appropriate lexical items, speaking in tone of voice associated with sadness (cf., Fairbanks & Pronovost, 1939) , and displaying an appropriately somber facial expression. Motor mimicry (e.g., displaying an expression that is appropriate to the partner's emotional state) is one means by which interactants convey their understanding of their partners' points of view (Bavelas, Black, Lemery, & Mullett, 1986; Bavelas , Black, Chovil, Lemery, & Mullett, 1988) . It is reasonable to suppose that the absence of appropriate nonverbal cues may lead an addressee to infer that an utterance is in some way defective -- e.g., that it's not what it appears to be. Judgments of subjects trying to determine which of two versions of the same narrative was the spontaneous one were reliably correlated with the rate at which the speaker displayed particular kinds of gestures and speech dysfluencies (Chawla & Krauss, 1994) . Interestingly, although subjects were considerably more accurate than chance, they were unable to articulate the clues they used to make their judgments.

6.2.3 Communication and Thought

Models of message production depict the process by which messages are generated and have an effect on addressees. With few exceptions (Zajonc,1960; Higgins, 1981), such models give little consideration to the cognitive consequences of message production for the speaker. There is, however, abundant evidence that creating a message can affect the way the creator perceives, remembers and thinks about the message's contents. Beginning with the classic experiment by Carmichael and his colleagues in the 1930's, a substantial body of evidence has accumulated indicating that labeling a stimulus affects its representation in memory (Carmichael, Hogan, & Walter, 1932; Daniel, 1972; Thomas & DeCapito, 1966) . Labeling is one of the

means by which communicators coordinate perspectives, and Wilkes-Gibbs and Kim (1993) found that incorporating a particular perspective into the verbal label for an ambiguous figure affects the speaker's subsequent memory for the figure. For example, subjects who referred to a figure as a "camel," rather than a "barn with a silo," later over-estimated the similarity of a camel-like figure to the original. Recent work by Schooler and his colleagues (Fallshore & Schooler, in press; Schooler & Engstler-Schooler, 1990; Schooler, Ohlsson, & Brooks, 1993) on "verbal overshadowing" suggests a possible cognitive mechanism for such effects. According to their *recoding interference hypothesis,* verbalizing a description can produce a memory representation that is biased in the direction of a particular perspective. Such representations can compete with other representations in memory (e.g., visual) and affect recognition. Interestingly, the effects of verbal overshadowing are not limited to visual stimuli. Similar effects have been found for taste preferences and for satisfaction with one's choices (Wilson, Lisle, Schooler, Hidges, Klaaren, & LaFleur, in press; Wilson & Schooler, 1991) .

Speakers' interpersonal attitudes and memory also can be affected when they formulate messages about others. In a series of studies, Higgins and his colleagues have shown that a speaker's attitudes toward, and memory of, another person can be affected when the speaker tailors messages to the perspective of an addressee (e.g., Higgins et al., 1981; Higgins & Rholes, 1978; McCann, et al., 1991; see Kraut & Higgins, 1984; Higgins 1992, McCann & Higgins, 1992 for a review of this work). In these studies, speakers read brief personality sketches of a fictitious target person, and then described him to an addressee who was said either to like or to dislike him. Speakers tended to bias their characterizations of the target's ambiguous traits in the direction of the addressee's attitude; he might be described as *persistent* to an addressee who liked him, but *stubborn* to one who didn't. Subjects' subsequent recollections of these traits tended to be distorted in the direction of their descriptions.

Krauss and Chiu (1993) have proposed a reformulation of the traditional Whorfian view, contending that language *use,* rather than linguistic structure, affects cognition. They hypothesize that particular linguistic forms can be associated with specific mental

representations, and that using a particular form communicatively can create a representation in the speaker's memory that may compete with other memorial representations. Considered solely from the point of view of successful reference, two alternative referring expressions may be equally effective. In a group of five males and one female, either "That *lady* over there" or "That *woman* over there" would enable the addressee to identify the referent. However, if the meanings associated with *lady* and *woman* differed in some important way, attributes of those meanings could become part of the speaker's mental representation of the person referred to. A corollary of this position is that factors that influence usage (i.e., that determine the particular form a linguistic representation takes on a particular occasion of use) can come to influence the way a speaker thinks about the state of affairs under discussion. Since a large variety of factors can determine the particular form a linguistic expression takes, the potential implications of this point of view are quite far reaching. Recent years have seen a rekindling of interest in the effects of language on cognition (Hardin & Banaji, 1993; Hoffman, Lau, & Johnson, 1986; Hunt & Agnoli, 1991; Hunt & Banaji, 1987; Kay & Kempton, 1984; Semin & Fiedler, 1991) , but the topic may turn out to be better described as the effects of communication on cognition.

6.2.4 The Social Roots of Meaning

Rommetveit (1983) contends that much recent work in communication, including research motivated by the Collaborative approach, constitutes little more than minor elaborations of an Encoding/Decoding model. Although his argument is not completely persuasive, there is at least one respect in which Rommetveit's point is well taken: All of the models we have discussed can accurately be characterized as *individualistic:* they attempt to account for communication in terms of the mental processes of individual speakers and hearers between whom meaningful utterances are exchanged. Even those models that stress the critical role interaction plays in clarifying speakers' intentions identify these intentions as attributes of individuals. Rommetveit's argues that such intentions are themselves socially constituted, and contends that "…no authentic social psychology of language can be developed by adding

auxiliary notions about social-interactional features of verbal communication onto such basic presuppositions" (1983, p. 94).

In contrast to this individualistic view, what we will call (for want of a better term) a *Fully Dialogic* view would start from the assumption that, quite apart from its expression, meaning is inherently social -- that it does not reside solely in the mind of individual speakers and hearers (Bakhtin, 1981; Markova & Foppa, 1990; Rommetveit, 1974; Volosinov, 1986; Wold, 1992). One source of this view is Vygotsky's socio-genetic approach to thought, which characterizes learning to think as a process of internalizing external dialogues with significant others (Vygotsky, 1962; Wertsch, 1985). These external dialogues take place in an intersubjective context (a state of *mutual* orientation toward the other) that appears to exist from birth (Braten, 1992; Trevarthen, 1992).

For individualistically-oriented models, our perceptions of the world are precursors to communication and exist independently of it. In the Fully Dialogic view, however, our perceptions of the world derive from the state of mutual orientation and the way we talk about the world. Volosinov[31] writes

> It is not experience that organizes expression, but the other way around -- *expression organizes experience*. Expression is what first gives experience its form and specificity of direction... Indeed, from whichever aspect we consider it, expression-utterance is determined by the actual conditions of the given utterance -- above all, by its *immediate social situation*. (1976, p. 85, italics in original).

The distinction between this view and those discussed earlier may be seen in an example. Consider the ambiguous Tangram figure in Figure 5. A Perspective-taking view yields the prediction that a speaker would tend to describe the figure as a "barn with silo" when talking to a farmer, but as a "camel" when talking to a zoo keeper. In contrast, a Fully Dialogic model would predict that a speaker would be more likely to *perceive* the figure as a barn with silo or a camel, depending on whether the conversational partner was a farmer or zoo keeper. The difference between the two positions is not trivial. A Fully Dialogic view gives communication a

preeminent role in the construction of mind. Intriguing as this notion is, and broad though its implications may be, it has proved difficult to formulate in an empirically testable way. We know of no research that has addressed it directly.

* * *

Recent years have seen a growing appreciation by social psychologists of the importance of understanding the role interpersonal communication plays in the phenomena they study. We anticipate that examining the role of communication will deepen our understanding of these phenomena, but we also believe that these explorations will contribute to our understanding of the mechanisms by which interpersonal communication is accomplished. And these insights, in turn, will be incorporated into theoretical models of the communication process. We are, therefore, relatively optimistic about the prospects for achieving a more comprehensive and systematic social psychological understanding of interpersonal communication.

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FOOTNOTES

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[1] In what is the classic definition, Allport defined social psychology as:

...an attempt to understand and explain how the thought, feeling, and behavior of individuals are influenced by the actual, imagined or implied presence of others (Allport, 1954, p. 3, italics in original).

Some more recent definitions have defined social psychology in terms of its subject matter -- social behavior. ("…the scientific study of social behavior," Sears, Peplau, & Taylor, 1991, p. 2); "…the systematic study of the nature and causes of human social behavior," Michener, DeLamater, & Schwartz, 1990, p. 5). Given the difficulty of defining social behavior with any precision, these definitions do not seem to improve on Allport's. Brown (1986), probably wisely, refrains from offering a definition.

[2] These and other conversational principles will be discussed in Section 3.

[3] See Section 3.2.3 for a discussion of work on the role of perceived intentions in research.

[4] The "more-or-less " is a hedge, intended to signal that the matter is not quite so simple. All but a very few words bear an arbitrary relation to their meaning, but for nonverbal symbols the relation of symbol to thing signified is often non-arbitrary to some degree. The connection may be historic (the cross is a symbol of Christianity because of its association with the crucifixion), iconic (the X used on highway signs to signify a railroad crossing resembles a crossing), or what for want of a better term might be called "abstractly representational" (the

number of stars and stripes in the American flag stand for certain historical facts about the nation). The point is that, whatever its origin, the *meaning-in-use* of the symbol becomes detached from its original connection with what it signifies, and comes to stand for the thing itself in an immediate way. People do not see a cross and say to themselves "Because of the cross's role in the story of the crucifixion it is associated with Christianity. Therefore it is used to mean or represent Christianity." Rather, the cross has come to signify Christianity in the same way that a hexagonal sign signifies "Stop!", and *kick the bucket* means "die." The historical reasons for the associations are largely irrelevant to the communicative function.

[5] Of course, the intended meaning of a symbolic display may not be clear. The American flag is a symbol, but often it is displayed under circumstances that lead one to wonder what message the display is intended to convey — perhaps that the displayer is a loyal citizen, diffusely patriotic, or just the kind of person who displays the flag. In the terms of speech act theory (Austin, 1962; Bach & Harnish 1979), the illocutionary force of the act is indeterminate. Of course, the same can be said of certain utterances.

[6] This is not to say that facial expressions are typically duplicitous. On many (perhaps most) occasions, what one wants others to believe one is experiencing is what one really is experiencing, and the expressive behavior will be an accurate reflection of the person's internal experience.

[7] Again, the situation is not quite so simple. Although pitch and loudness are affected by a speaker's emotional state, variations in pitch and loudness also can serve syntactic functions. Particular prosodic contours are associated with sentence types (e.g., a rising contour with interrogative sentence, etc.), and stressing particular words can affect the implicit presuppositions that underlie the sentence's understood meaning (compare *"I'll* be there tomorrow" vs. "I'll be there *tomorrow").*

[8] The term *code* is used by linguists, sociolinguists, and others concerned with language in a variety of rather different ways (cf., Bernstein, 1962; Bernstein, 1975; Ellis, 1992; Ellis & Hamilton, 1988). We will use the term to refer to the general notion of a mapping system.

[9] We will use the terms "speaker" and "listener," "addressee," or "hearer" to refer to the initiator and recipient of a message in any communication modality (spoken, written, etc.).

[10] Of course there are areas of psychology in which the quantitative indices that the information theory provides are of great utility (Attneave, 1959; Hick, 1952; MacKay, 1983; Young, 1987). The point here is that, despite the initial enthusiasm, its application in the study of interpersonal communication in general and language in particular has been disappointing.

[11]In their Linguistic Category Model, Semin and Fiedler (1992) draw a somewhat different set of distinctions. They differentiate two kinds of IA verbs: *descriptive action verbs* (DAVs) and *interpretive action verbs* (IAVs). DAVs (e.g., *shove, caress)* refer to concrete, singular behavioral episodes. IAVs (e.g., *deceive, compliment)* also refer to singular episodes, but in a less concrete fashion (one can *deceive* in a great many ways). Semin and Fiedler also distinguish between *state action verbs* (SAVs), which refer to a state caused by a specifiable action of an agent (e.g., *surprise*, *bore),* and *state verbs* (SVs), referring to states that ordinarily cannot be identified with a specifiable action (e.g., *admire, despise).* SAVs and SVs correspond to S-E verbs and E-S verbs, respectively.

[12]The issue of what constitutes a communicative intention in psychological terms is unclear, and beyond the scope of this chapter. For present purposes, we will assume that an intended message is one that the speaker meant to convey. We will leave as an open question the level of consciousness at which such intentions or plans occur.

[13]Defining relevance has proved to be problematic, and a number of different formulations have been offered (e.g., Berg, 1991; Sperber & Wilson, 1986). Here, we will use a rough definition of relevance in terms of the relationship of an utterance to previous utterances (e.g., is it on the same topic, does it address the question?) However, Berg argues that it is not

the relationship between *utterances* that defines relevance but rather the extent to which successive utterances address participants' goals.

[14]One strength of the Gricean perspective is that it allows for infinite flexibility and creativity in language use. As Levinson (1983, p. 112) observes,

One general point that ... exploitations of the maxims raises is that there is a fundamental way in which a full account of the communicative power of language can never be reduced to a set of conventions for the use of language. The reason is that wherever some convention or expectation about the use of language arises, there will also therewith arise the possibility of the non-conventional *exploitation* of that convention or expectation. It follows that a purely conventional or rule-based account of natural language usage can never be complete, and that what can be communicated always exceeds the communicative power provided by the conventions of the language and its use.

[15] The locutionary and illocutionary force of an utterance correspond roughly to Grice's sentence meaning and utterance meaning.

[16] Listeners' ability to distinguish between different sentence forms of the same indirect request is sometimes presented as evidence that literal sentence meaning is processed prior to indirect meaning, as the three-stage model argues. However, as Holtgraves (1994, footnote 3) correctly notes, such politeness judgments do not rule out the possibility that literal meaning is determined simultaneously (or even after) indirect meaning. It is also possible, as Holtgraves points out, that different forms of indirect requests are more or less idiomatically polite and may be judged without computing their literal meaning.

[17]Since excellent recent reviews of this work are available (Hilton, in press; Schwarz, 1994), we will not describe it in great detail here.

[18] It might be helpful if researchers distinguished between two states of affairs: *shared knowledge* or *common ground*— knowledge that each participant possesses, but may or may not realize that the others possess (hence, people come to discover their common ground through

discussion), and *mutual knowledge* — the special case of situations that meet the stronger mutually reflexive criterion specified by Clark and Marshall.

[19] Schober (1993) distinguishes between *spatial* perspective taking, which concerns assessing another's physical point of view with regard to an object or location, and *conceptual* perspective taking, which has to do with assessing knowledge, beliefs, etc. However, the two are not completely independent. Effective use of such locative statements as "right in front of you" to identify an object's position rests equally on an assessment of the object's position relative to the addressee *and* an assessment of the addressee's ability to apprehend the referent visually.

[20] Kogan also reports that middle-aged adults used longer messages for other middle-aged adults than for elderly adults, which is surprising since most studies have found figurativeness and length to be negatively correlated.

[21] Interestingly, when the subject described the target for a second person after a week's delay, these effects were not found. McCann et al. argue that the initial descriptions altered the speaker's own view of the target over the course of the week, an interpretation that is consistent with their previous work in this area. The finding suggests, as Graumann (1990) observes, that perspective-setting (stating one's own view) may be as important as perspective-taking, especially where attitudes are concerned.

[22] Virtually all studies of solo speakers' messages across a series of trials have found that message length rarely decreases across trials and sometimes actually increases, unlike communicators in conversational contexts (Fussell, 1990, Experiment 2; Schober, 1992, 1993).

[23] Unfortunately, in the Traxler and Gernsbacher experiments, the set of distracters was not known by the writers. Hence, it is possible that their results reflect writers' growing appreciation of the reader's *task* rather than an increasingly accurate view of the addressee *per se.*

[24] These studies still beg the question of how subjects make their assessments. We have proposed a number of mechanisms -- reasoning from knowledge of one's acquaintances (Dawes, 1989), from subjective familiarity, or from ease of recall. In addition, it is not completely clear

what subjects' percentage ratings in these situations represent. Response scales are typically in intervals of ten percent or so. As Yaniv & Foster (1991) point out, judgments of likelihood vary in specificity. A person's estimated time of arrival might characterized as "late afternoon," "fivish" or "5:12 pm." Yaniv & Foster label this variation "graininess" of judgment. The same graininess applies to judgments about others' perspectives. For instance, someone might judge the probability a non-New Yorker would be able to recognize the Guggenheim museum as "better than 50%," "60-70%," or "62.5%". Little is known about the precision with which communicators make such judgments, but it is likely that graininess will vary depending upon such factors as the topic domain, the ability to correct erroneous first attempts at message formulation, the precision required by the task, etc. As Yaniv and Foster note, there is a tradeoff involved in specificity of judgments: the more precise one is, the more informative one's judgment; however, the more likely one also is to be wrong.

[25]Pinker (1994, p. 19)) calls language "…a biological adaptation to communicate information," but neither he nor other biologically-oriented language theorists give much consideration to the way language was shaped by the circumstances in which it evolved. It is a commonplace of evolutionary theory that biological systems evolve to function in a specific set of circumstances, or ecological niche. Such considerations account for (among other things) the way the visual systems of eagle and frog differ (Walls, 1963). If language evolved primarily to serve communicative needs in face-to-face interaction, it would not be surprising that its features were adapted for communication in that particular setting. However, the main thrust of contemporary linguistic theory, with its emphasis on idealized competence models of production and comprehension, seems oblivious to the implications of this possibility.

[26] Two collections of articles (Atkinson & Heritage, 1984; Drew & Heritage, 1992) provide a good introduction to research in the CA tradition.

[27] It is part of the conversational analyst's methodological canon that analyses must be based on naturally–occurring corpora drawn from everyday interaction. They eschew

hypothetical examples, responses to an interviewer's questions, interactions whose primary purpose is to provide data, and, perhaps especially, experiments. They also tend to be indifferent about issues of control, representativeness, and selection bias. This may account for the lack of contact between social psychology and conversational analysis, despite their interest in similar phenomena (cf., Krauss, 1988)..

[28] Eavesdroppers in such public places as restaurants and elevators may understand a good deal more than others think. It also may be the case that communicators pay less attention to some categories of potential eavesdroppers than others. The novelist E. Annie Proulx describes her own experience:

"…I can sit in a diner or a cruddy little restaurant halfway across the country, and there will be people in the booth next to me, and because I'm a woman of a certain age, they'll say anything as if no one were there. People will say absolutely outrageous, incredible things. I once overheard people talking about killing someone" (Rimer, 1994, p. C10).

It's not clear whether speakers don't bother to conceal what they are saying from older eavesdroppers because they do not notice them (as Proulx hypothesizes) or because they believe the common ground is insufficient for comprehension.

[29] Since the subjects were similar in terms of memory span and other cognitive and linguistic skills, Hupet et al. argue that this tendency to create new descriptions rather than use the prior common ground might be due to elderly subjects being distracted by other thoughts etc. However, a number of plausible alternative explanations suggest themselves. Elderly subjects may have thought that the experimenter intended for them to create new descriptions, or they may have felt more freedom to modify the description to suit their own conceptions of the stimuli. In addition, student populations probably are more homogeneous than the one from which the elderly were drawn, and, as a result, students may have been better able than the elderly to assess the addressee's perspectives.

[30]The distinction is analogous to that discussed in Section 1.2 between blushing and saying "I'm embarrassed." In some sense both "messages" are the same, but the means by which they are conveyed are quite different

[31] Many believe that the works on literary theory published under Volosinov's name actually were written by Mikhail Bakhtin. However the name was not a *nom de plume;* V.N. Volosinov, a Russian writer and intellectual, was a member of Bakhtin's circle. Regardless of whether Volosinov wrote the works that bear his name, there is little doubt that the ideas they express bear the stamp of Bakhtin's thinking, and reflect themes that can be found in both his earlier and later writings. For a biography of Bakhtin and a detailed treatment of his theorizing, see Clark & Holquist (1984); for a brief sketch, see Lodge (1990, pp. 1-10).

Table 1: Grice's Cooperative Principle and its associated Conversational Maxims.

The Cooperative Principle:

Make your conversational contributions such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged.

Maxims of Conversation

1. *Quantity*

   i. Make your contribution as informative as is required (for the current purposes of the exchange).
   ii. Do not make your contribution more informative than is required.

2. *Quality*

   i. Do not say what you believe to be false.
   ii. Do not say that for which you lack adequate evidence.

3. *Relation*

   i. Be relevant.

4. *Manner*

   i. Avoid obscurity of expression.
   ii. Avoid ambiguity.
   iii. Be brief (avoid unnecessary prolixity).
   iv. Be orderly.

Table 2. Sample of utterances that can be used with the illocutionary force of a request to "shut the door." (Adapted from Levinson, 1983, p. 264.)

1. Close the door.
2. Can you close the door?
3. Would you close the door?
4. It might help to close the door.
5. Would you mind awfully if I asked you to close the door?
6. Did you forget the door?
7. How about a bit less breeze?
8. It's getting cold in here.
9. I really don't want the cats to get out of the house.

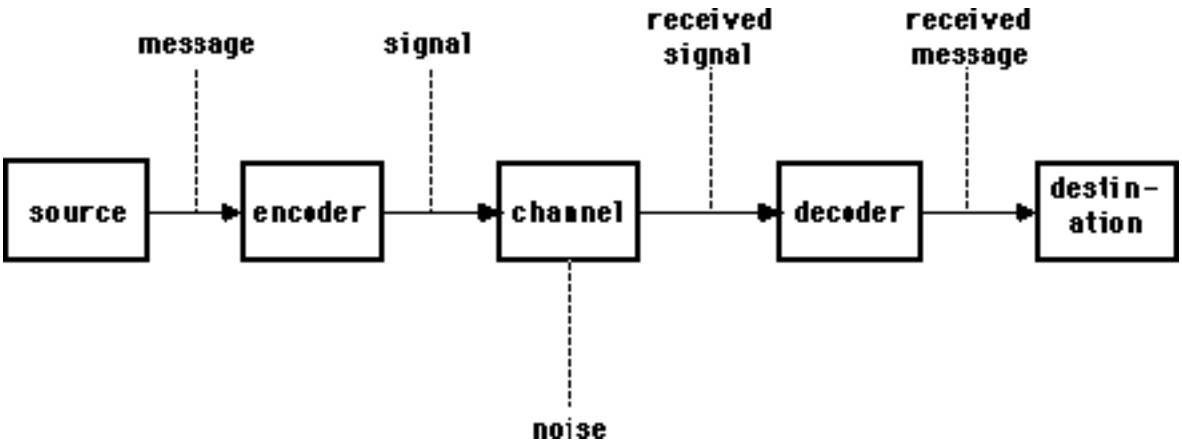
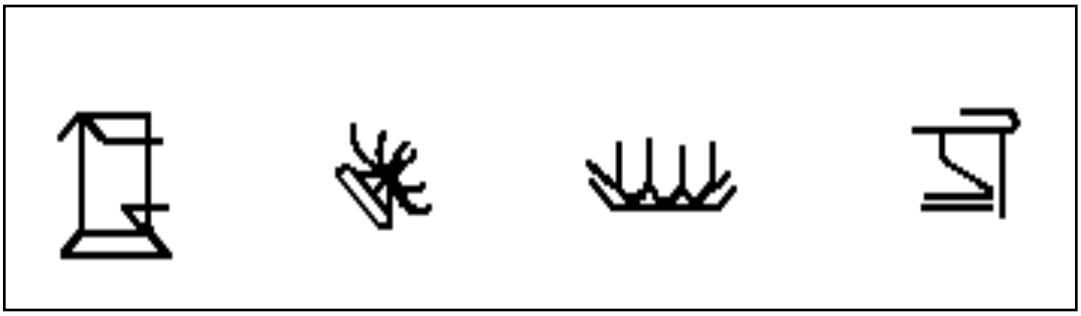
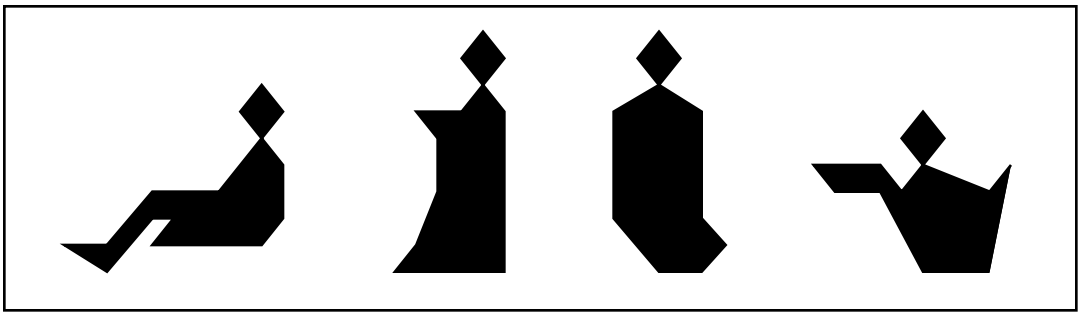


FIGURE 1

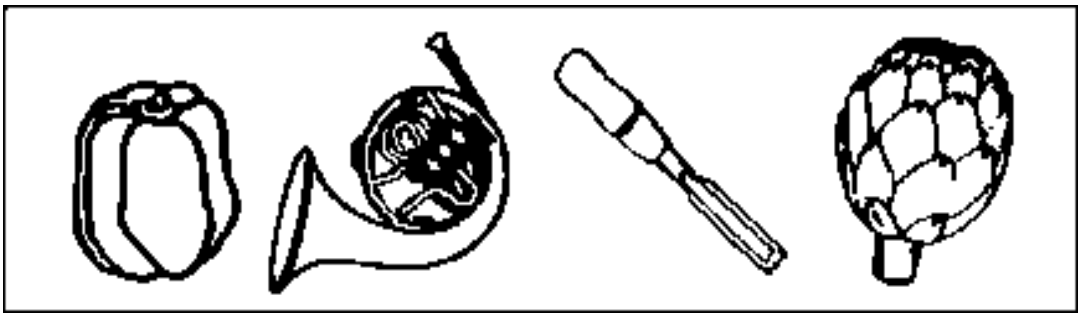
Schematic illustration of the Encoding/Decoding model.



Panel A



Panel B



Panel C

Figure 2

Examples of three types of stimuli used in referential communication studies.

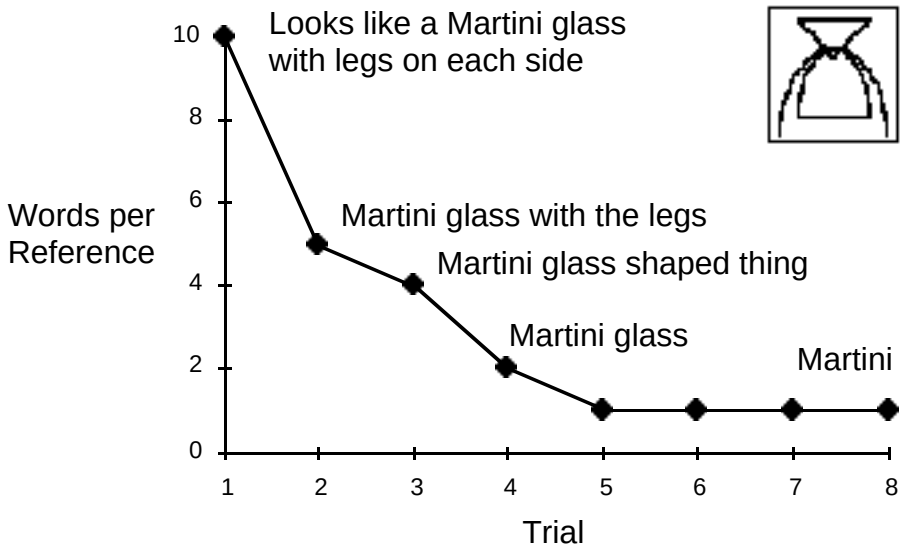


FIGURE 3

Illustration of the process by which the referring expression for an innominate figure becomes shortened over a the course of successive references.