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Conversational Processes and Causal Explanation

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Causal explanation takes place in and takes the form of conversation. Explanations are selected by questions and are thus governed by general rules of discourse. A conversational model of causal explanation is introduced that explicates social aspects of the explanation process by postulating that good explanations must be relevant to the focus of a *why* question, as well as being true. The notion of explanatory relevance enables an integration of the major models of the attribution process by showing that they use the same counterfactual logic but address different causal questions. The conversational perspective suggests a reinterpretation of many attributional biases, and also highlights the role of interpersonal goals in generating implicit questions, which in turn constrain explanations. Finally, the relevance of the conversational perspective for research on causal networks, the social context of explanation, and intrapsychic explanation is noted.

Causal explanation is first and foremost a form of social interaction. One speaks of *giving* causal explanations, but not attributions, perceptions, comprehensions, categorizations, or memories. The verb *to explain* is a three-place predicate: *Someone* explains *something* to *someone.* Causal explanation takes the form of conversation and is thus subject to the rules of conversation.

Causal explanation is therefore different from causal attribution, which does not involve an interpersonal exchange. In its wider sense, attribution describes a process whereby one ascribes some phenomenon to its origin. Thus, one attributes effects to causes, actions to intentions, and sayings to their authors. This sense of attribution is close to that which Heider (1958) had in mind when writing of how the sensation of light reflecting off a surface may be attributed to its distal source, the sun, or how an exam performance may be attributed to its source in a student's ability, effort, or luck. Thus, attributing something to someone is not the same as explaining something to that person.

The difference between this sense of attribution and conversational explanation is nicely drawn out by the experience of U.S. Senator Joseph Biden. During his campaign for the 1988 Democratic Party nomination for president, Biden gave an impassioned campaign speech about social inequality that faithfully reproduced words and phrases in a speech given by British Labour Party leader Neil Kinnock during the 1987 British general election without attributing them to their source. When it was demonstrated that the origin of Biden's speech lay in that given by Kinnock, Biden had to withdraw his candidacy. Shortly thereafter, however, it was reported that Mr. Kinnock was planning to visit Senator Biden in Washington. This prompted the thought that although Senator Biden had not attributed his words to Mr. Kinnock, he could at least explain them to him.

The interpersonal nature of explanation is overlooked in most contemporary theories of causal attribution. The preferred view is that afforded by the "man-the-scientist" analogy first proposed by Heider (1958) and extended by subsequent theorists (e.g., Kelley, 1967; Nisbett & Ross, 1980). In this view, the layperson is pictured as arriving at explanations by observing the covariation of putative causes and effects and using procedures analogous to the scientific analysis of variance to attribute causality. The man-the-scientist model envisages the process of causal attribution as being essentially intrapsychic in nature. It does not explicitly concern itself with interpersonal and functional factors that might constrain the attribution, such as *who* is doing the explaining, *to whom* the explanation is being given, or *why* an explanation is needed.

In this article, I develop a conversational model of causal explanation that directly addresses interpersonal and functional aspects of causal attribution. The conversational model takes advantage of recent advances in the formulation of the logic of the attribution process (Hewstone & Jaspars, 1987; Hilton & Jaspars, 1987; Jaspars, 1983, 1988; Jaspars, Hewstone, & Fincham, 1983) that show how subjects apply Mill's (1872/1973) method of difference in causal attribution. These advances in attribution theory enable explication of the connections between the logic of Mill's method of difference and general constraints on conversation (Grice, 1975). The present approach thus shows how recent work in ordinary language philosophy on the relation between logic and conversation can be applied to the analysis of commonsense explanation. In so doing, I incorporate and extend earlier work that applies ordinary lan-

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guage philosophy to attribution theory (Hilton, 1988; Hilton & Slugoski, 1986; Turnbull, 1986; Turnbull & Slugoski, 1988).

Recognition of the conversational nature of causal explanation affords four main advantages to attribution theory. The first is that it enables integration within attribution theory by showing that the diverse models of the attribution process all use the same logic of counterfactual reasoning but answer different causal questions. The second is that it suggests how attribution theory may be integrated with other disciplines that study causal reasoning, such as decision theory (Einhorn & Hogarth, 1986), cognitive psychology (Kahneman & Miller, 1986; Kahneman & Tversky, 1982), discourse comprehension (Trabasso & Sperry, 1985; Trabasso & van den Broek, 1985), and developmental psychology (Trabasso, Stein, & Johnson, 1981). The third is that the present approach suggests that many attributional "biases" (e.g., underuse of base-rate information, underuse of consensus information, actor–observer differences) may reflect the inadequacy of normative models that fail to take conversational processes into account. The fourth is that the conversational perspective suggests ways that attribution theory can be extended to areas that would increase its ecological validity, such as the analysis of causal networks and the kinds of spontaneous explanation that occur in natural conversation.

This article proceeds in six parts. First, I outline a conversational model of causal explanation. Second, I show how major models of the attribution process use the same counterfactual logic, but answer different types of causal questions. Third, I show how considerations of logical presupposition and focus govern the kind of explanations subjects give in typical experiments on causal attribution processes. Fourth, I reanalyze some attributional biases in terms of conversational processes. Fifth, I outline how some interpersonal and functional considerations may provide an indirect source of constraint on explanations by determining the kinds of questions that are at issue. Finally, the analysis is summarized, and its relation to other work is discussed.

A Conversational Model of Causal Explanation

In this section I build on some previous work (Hilton, 1988; Hilton & Slugoski, 1986) that proposed that ordinary causal explanation proceeds through the operation of *counterfactual* and *contrastive* criteria rather than through the application of a single *covariational* criterion, as proposed by Kelley (1967) and many others (for recent reviews, see Alloy & Tabachnik, 1984; Crocker, 1981). The conversational model of causal explanation states that explanations identify the factor that makes the difference between a target event and a counterfactual contrast case. It also states that explanations are constrained by general rules of conversation. As is shown, some crucial logical features of causal explanation, such as the distinction between diagnosis and explanation, reveal themselves quite naturally through Grice's (1975) maxims of conversation.

Causal Diagnosis and Causal Explanation

Current psychological theories of causal reasoning have failed to make a sharp distinction between two stages of causal judgment that I term *diagnosis* and *explanation*. In the first stage, causal diagnosis, an event is attributed (traced back) to its source. The problem is thus one of identifying a causal *connection* between two events (cf. Hesslow, 1988). In explaining a train crash, one may start by considering "kernel hypotheses" such as *accident* and *sabotage* (cf. Abelson & Lalljee, 1988) and collect evidence to evaluate these hypotheses. This stage of hypothesis evaluation is a judgment under uncertainty, and here it is meaningful to speak of judging the *probable* cause of the event. If investigations reveal that the train crash was most probably due to an accident, one would cite the accident as the "best" explanation, as it is the most probable cause.

In the second stage, that of interpersonal explanation, one may, for present purposes, presuppose certainty in the explainer's mind about the causes of the event. Perhaps the explainer's causal diagnosis revealed that the train crash was due to a combination of several necessary conditions that are jointly sufficient: a bent rail in the track and the speed and weight of the train. Rather, the problem is how to resolve a puzzle in the explainee's mind about why the event happened by closing a gap in his or her knowledge (cf. Turnbull, 1986). Thus the problem is one of causal *selection*, of dignifying one of a set of necessary conditions as "the" explanation for an event. If one knows that the explainee knew about the speed and weight of the train but did not know that there was a bent rail in the track, the apt and informative answer to the *why* question would be to cite the bent rail as "the" cause. Here, the bent rail is cited as the best explanation because it is the most *relevant* answer to the question posed, not because it is a more probable cause of the accident than the speed and weight of the train.

On the other hand, the explainee might already know that there was a bent rail in the track and assume that the train was obeying special speed restrictions. However, if in fact the train-driver had failed to see the special speed restrictions and traveled at normal speed over the bent rail, thus producing the accident, then a felicitous explanation would refer to the speed of the train. In this case, it is the fact that the train traveled at its normal speed that makes the difference to the accident from the inquirer's point of view. Consequently, abnormal conditions such as a bent rail should only be cited as explanations in default of particularized knowledge of the inquirer's mental model of the event. In this respect, the conversational model provides a more powerful constraint on the selection of explanations than does the abnormal conditions focus model of causal attribution (Hilton & Slugoski, 1986).[1]

[1] Of course, it could be suggested that traveling at a normal speed when there is a warning to slow down is itself an abnormal thing to do. Hence, in this context, traveling at a normal speed would qualify as an abnormal condition and so be selected as the cause. This example illustrates the difference between contrasting the target event to what is generally normal and contrasting it to what would be normal in this particular case. One could handle this difference by changing what is considered normal in a given context, as suggested by Hart and Honoré (1985). Consequently, there would often be considerable convergence between conversational explanation and the selection of abnormal conditions. However, the conversational model can also use counterfactual contrasts other than the normal case, as is indicated later.

Causal Selection and Explanatory Relevance

Any given event has a plethora of necessary conditions for its occurrence. Necessary conditions for a train crash may include the train's speed or weight, a bent rail, the absence of warning lights, the locomotive power of the engine, the presence of fuel in the engine, and so on. The problem is how to select one of these conditions as the cause to mention in a causal explanation.

Here I develop an approach to the problem of causal selection taken by Hesslow (1983, 1984, 1988). The key insight is to recognize that one does not explain events per se, but that one explains why the puzzling event occurred in the target case but not in some counterfactual contrast case. Explanations must therefore be relevant to some question and explain the difference between the present case and some contrast case implied by the question. Every *why* question thus has an implicit *rather than* built into it.

The process of causal explanation proceeds by comparing the features in the target case with those in the background case. Those that are shared between the target case and the contrast case are *presupposed,* whereas the feature or combination of features that makes the difference between the target case and the contrast case is *focused* and selected as "the" cause. The factor identified by this process must have explanatory relevance by virtue of explaining the difference between the target and the contrast case. One implication of this position is that the proper unit of analysis in attribution theory should be the question–answer pair (cf. Turnbull & Slugoski, 1988).

Selection of Explanations by Questions

The notion of explanatory relevance helps to solve the problem of causal selection by relativizing explanations to questions. Explanations are selected by questions (Hesslow, 1988). In fact, different types of discourse typically presuppose different levels of understanding, and hence ask different types of question. Hence, different types of explanation are relevant depending on the type of question posed.

As Hart and Honoré (1985) recognized, the questions posed in scientific inquiry are often not relevant to the pragmatic, localized concerns of the layperson. In science, one asks "Why do people die?" rather than "Why did this man die when and how he did?" So in explaining a death by murder, one refers to individuating features of the case (e.g., "his ex-lover shot him") rather than to other necessary conditions of death (e.g., "he stopped breathing, thus preventing oxygen flow to his brain"), which are uninformative as they hold true of all deaths. Consequently, in explaining an event to a competent adult, one would refer to individuating features of the case that cannot be presupposed from general world knowledge, such as abnormal conditions, and omit to mention the mechanisms that produced the event, as they can be presupposed.

On the other hand, one may produce complete explanations that explicate causal mechanisms when mention of these is relevant to the inquirer's question. For example, children often ask "stupid" questions about why things do what they do. Answers to requests for complete causal descriptions, including causal mechanisms, typically explain how things function normally, not why an aberration happened. Such questions investigate the nature of things, not the causes of specific events. Explications of familiar, normal functions are often sought by *why* questions, but also by *how* and *what makes it work* questions (Berzonsky, 1971; Nass, 1956; Shultz & Kestenbaum, 1984). Thus, Berzonsky (1971, p. 712) concluded from studies on 6- and 7-year-old children that "Explaining what makes a clock tick requires a description of the whole mechanical system of a clock, whereas the failure of a clock to tick may be attributed to a single factor."

To be felicitous, causal explanations must therefore be *relevant* to a question as well as *true* of the target event (cf. Austin, 1962). This is the major insight gained by recognizing the conversational nature of causal explanation. In seeking to communicate the relevant information from his or her mental model of the causal structure of an event, the speaker will produce felicitous causal explanations if he or she follows general principles of conversation. In the following section, I expand on how general conversational principles further constrain the formulation of explanations in ordinary conversation.

Maxims of Causal Explanation

Ordinary conversation seems to follow some very basic and general rules. Grice (1975) noted that conversation is ordinarily a cooperative activity between two individuals. As such, cooperative conversationalists typically follow certain principles, which Grice (1975) expressed in terms of four conversational maxims. These are the *maxim of quality,* the *maxim of quantity,* the *maxim of relevance,* and the *maxim of manner.* These maxims of conversation solve some general problems for the philosophical analysis of how ordinary language is used (Austin, 1962), and each seems to have something nontrivial to say about the formulation of good causal explanations.

The maxim of quality enjoins speakers to say something that they know not to be false and not to say something for which they lack adequate evidence. Consider the case of a physician who is not certain of a diagnosis of jaundice, but acts as if he or she is. The listener is entitled to believe that the explanation that the condition is due to jaundice is sincerely meant and that the speaker (the physician) has adequate evidence for that diagnosis. However, if the speaker does not really believe what he or she is saying, then the maxim of quality is violated. The explanation may conform to Grice's (1975) other three maxims—being informative, relevant, and perspicuous—but it lacks quality. Of course, the speaker may explicitly hedge on the quality of his or her utterance by saying "I believe that/I suspect that/It may be a duodenal ulcer" (see P. Brown & Levinson, 1987, pp. 164–166, for more examples of quality hedges).

The maxim of quantity enjoins speakers to make their contribution as informative as is required for the current purposes of the exchange, but not more informative than is required. For example, a doctor may diagnose a drinking problem in a patient. When asked why this patient is an alcoholic by a colleague who does not know the patient's history, the doctor may resolve the puzzle as to why this patient is drinking now rather than before by explaining that the patient lost his job. However, when

the patient's wife asks why her husband has become an alcoholic, the doctor may answer that the husband has a genetic predisposition to alcoholism, as he comes from a family with a history of alcoholism. This would explain why he became addicted to alcohol, whereas his coworkers, who were also laid off by the same factory at the same time, did not (cf. Hesslow, 1984). Note that the changing focus of the *why* question does not change the doctor's belief in the probable truth of the diagnosis that the drinking problem is due to the interaction of the patient's genetic predisposition with stress. The doctor changes the explanation of the patient's condition in order to give an informative answer to an interlocutor's question.

The maxim of relevance enjoins the speaker to be relevant. One wants speakers to stick to the question at hand, not to give irrelevant answers. For example, if a patient asks his or her doctor why the doctor thinks he or she should stop drinking, the doctor might reply, "Better safe than sorry." The assumption that this answer is relevant to the question might prompt the patient to draw the inferences necessary to make the remark intelligible, for example, that excessive drinking can cause irreparable damage to one's body and one's life. By using an indirect form of explanation, the doctor may pointedly want the patient to infer that he or she should take a more active role in assessing life chances and change his or her life-style accordingly. Such hints may convey the relevant information without threatening the addressee's "face" (cf. P. Brown & Levinson, 1987).

The maxim of manner enjoins speakers to be perspicuous by avoiding obscurity and ambiguity and by being brief and orderly. People do not want long-winded, incomprehensible explanations unless they enjoy riddles. Normally, a patient would not appreciate being told that he or she should stop drinking and smoking because of the risk of myocardial infarction, even though such an explanation may have quality, quantity, and relevance. Rather, the patient would expect to be told in plain English that he or she is running the risk of a heart attack if he or she does not quit smoking and drinking.

All four of Grice's (1975) maxims therefore seem applicable to ordinary causal explanation. This follows from the claim that causal explanation is a form of conversation and that Grice's maxims are general rules that hold true of all ordinary conversation. In particular, the maxims of quality and quantity appear to express logical characteristics of explanations, such as their truth value and informativeness, whereas the maxims of relevance and manner express linguistic characteristics of explanations having to do with their conversational point and comprehensibility.[2]

Causal Questions and Attribution Processes

In this section, I show how different models of the attribution process may use the same counterfactual reasoning in the induction of necessary conditions, but explain different types of contrast. All models may thus be represented as special cases of the conversational model of causal explanation.

Mill's Method of Difference and Causal Explanation

As Mackie (1974) noted, counterfactual reasoning is simply a primitive application of Mill's (1872/1973) method of difference. The conversational model of causal explanation involves nothing more than the application of Mill's method of difference to a focused target case and a presupposed contrast case. This is the key insight that enables one to integrate the conversational model with the traditional models that depict the attribution process as being akin to the application of Mill's experimental methods (Jaspars, 1988; Jaspars et al., 1983; Kelley, 1967, 1972, 1973).

The analysis of variance (ANOVA) can be regarded as a method for analyzing statistical contrasts. However, Kelley's (1967) analogy between the ANOVA and ordinary causal attribution in the so-called ANOVA model was only taken to its logical conclusion by Jaspars et al. (1983), who proposed an inductive logic model of causal attribution.

In its common form, Kelley's (1967, 1972, 1973) ANOVA model proposes that the layperson analyzes the causal effect of three variables on a behavior, namely the *person* producing the behavior, the *stimulus* eliciting the behavior, and the *occasion* (time, circumstances) on which the behavior occurred. This requires the examination of three experimental control conditions: *consensus* information about whether the behavior occurs in the presence of other persons and the target stimulus, *distinctiveness* information about whether the behavior occurs in the presence of other persons and other stimuli, and *consistency* information about whether the behavior occurs in the presence of the target person and stimulus on other occasions. In the language of the conversational model of causal explanation, consensus, distinctiveness, and consistency information provide counterfactual contrast cases against which to evaluate the causal role of the target person, stimulus, and occasion, respectively.

In experiments designed to test the ANOVA model (e.g., McArthur, 1972; Orvis, Cunningham, & Kelley, 1975), subjects are not given enough information to calculate an ANOVA or its informal equivalent (Hilton, 1988; Hilton & Jaspars, 1987; Jaspars et al., 1983; Pruitt & Insko, 1980). To test the operation of three factors in a $2 \times 2 \times 2$ experimental design (Persons $\times$ Stimuli $\times$ Occasions), eight experimental cells are necessary. Subjects received only four (target event, consensus, distinctiveness, and consistency) in the McArthur (1972) experiment and five in the Pruitt and Insko (1980) experiment. The experimental design was thus incomplete, being analogous to a fractionated block design that allows for the analysis of main effects but not of interactions.

Subjects were nevertheless able to perform the experimental task required of them in such experiments, even to the extent of producing interactional attributions. This prompted Jaspars et al. (1983) to propose an inductive (sometimes called a *natural*) logic model that applied Mill's (1872/1973) method of difference to consensus, distinctiveness, and consistency information. This provided an improved prediction of the data ob-

[2] It is sometimes difficult to separate the implications of Grice's (1975) four maxims, and some theorists have attempted to reduce the maxims to a superordinate maxim of relevance (e.g., Sperber & Wilson, 1986). However, the four maxims do seem to correspond to useful philosophical, psychological, and linguistic dimensions (cf. P. Brown & Levinson, 1987) and are thus important sources of insight.

tained in experiments using appropriate response formats (Hilton & Jaspars, 1987; Jaspars, 1983).

Statistical Norms and the Missing Dimension of Covariation

Hilton and Slugoski (1986) were able to improve still further on the predictions of Jaspars et al. (1983) by specifying the role of presupposed norms in the attribution process. One way of interpreting Hilton and Slugoski's abnormal conditions focus model is to say that subjects completed the experimental design of the McArthur-style experiments with presuppositions about what was likely to happen in the empty cells. If one simplifies the problem by omitting the consistency dimension, then norm information would tell one the likelihood of the event's occurring in the presence of other people and other stimuli and would thus complete the experimental design, enabling the computation of an ANOVA or its equivalent after all (Hilton, 1988).

The inductive logic model (Jaspars et al., 1983) and the abnormal conditions focus model can both be represented as applying Mill's (1872/1973) method of difference. However, they differ in that the abnormal conditions focus model explicates the role of contrast cases in causal attribution.

The inductive logic model can be interpreted as addressing the question *Why did this effect occur rather than not occur?* (Hilton, 1988). The "norm" that it assumes is the nonoccurrence of the effect in question. If one takes the norm to specify whether the target event occurs in the presence of other people and other stimuli, then the 2 × 2 matrixes in Figure 1 can be completed by filling norm cells with the value 0.

The target event cells are filled with the value 1 to indicate that the target event occurs in the presence of the target person and stimulus. The consensus cells are filled with the value 1 to indicate that the target event occurs in the presence of other people and the stimulus (high consensus), and with the value 0 to indicate that it does not (low consensus). Likewise, the distinctiveness cell is filled with the value 1 to indicate that the target event occurs in the presence of the target person and other stimuli (low distinctiveness), and with the value 0 to indicate that it does not (high distinctiveness). Thus, one has four rough-and-ready 2 × 2 data matrixes.

It is easy to see that if an informal ANOVA is performed on these four data patterns, low consensus and low distinctiveness (LL) patterns will lead to person attributions, high consensus and high distinctiveness (HH) patterns will lead to stimulus attributions, low consensus and high distinctiveness (LH) patterns will lead to Person × Stimulus interaction attributions, and high consensus and low distinctiveness (HL) patterns will lead to person and stimulus main effect attributions. These predictions approximate well the results obtained in attribution experiments where appropriate dependent measures are used, provided that the target events are not highly normal (Hilton & Jaspars, 1987; Hilton & Slugoski, 1986; Jaspars, 1983).

The inductive logic model can thus be represented as assuming that the norm for the target event is that it would not otherwise occur. The abnormal conditions focus model, on the other hand, holds that the norm may vary and has to be specified. Only if the norm is different from the target case, thus rendering the target event as abnormal, can an explanation be identified. Thus, *Ralph trips up over Linda dancing* merits explanation because it contrasts with the norm *Some people trip up over some other people dancing.* If the norm cell is filled with the value ½ to indicate this, one arrives at a data matrix that indicates disjunctive main effects of both the person and the stimulus. This is indeed the response of subjects, who endorse the response that "Something special about Ralph and something special about Linda (even when they are not together)" caused the target event (Hilton & Slugoski, 1986). (See Figure 2.)

However, if the norm is that the target event frequently occurs anyway, then there is no contrast between the target event and the norm, and no explanation is possible. This is the case when one is asked to explain why *Sally bought something on her visit to the supermarket* when the norm is *Almost everyone buys something on their visit to almost every supermarket.* Here the norm cell is filled with the value 1, which leads to a data matrix that indicates no effects at all. Subjects correspondingly endorse the response that "Nothing special about Sally, this supermarket, this particular occasion, or any combination of the three" explains the event in question. Indeed, there is nothing for subjects to explain in this case except the conversational absurdity of being asked such a pointless question.

In sum, the present analysis supports the view that the inductive logic model and the abnormal conditions focus model use the same method of difference but address different causal questions. The abnormal conditions focus model and the conversational model clearly converge in explicating the importance of presupposed contrast cases in the explanation process. These contrast cases are of a statistical nature and enable the models to be compared within the ANOVA framework originally proposed by Kelley (1967).

Questions About Ideal Cases

Some contrast cases are nonstatistical in nature. One does not always have to analyze covariations to produce explanations. An event that *never* happened may even be used as a contrast case. Thus, the U.S. decision to drop the atom bomb on Japan can still be felicitously explained by reference to the counterfactual case of what could have happened had the United States not done so.

Some attributional models answer the question of why the target event rather than some prescribed case occurred. Thus, formal questions of responsibility arise when the target event deviates from some law or contractual obligation (Hart & Honoré, 1985). Such questions find their informal commonsense equivalent when moral and social norms are transgressed (Fincham & Jaspars, 1980; Semin & Manstead, 1983).

In addition, one sometimes explains why a personal goal was not achieved because of bugs in plan execution or goal conflict. Here questions such as *Why did this plan fail rather than succeed?* (Wilensky, 1983) and *Why did the actor value this goal rather than that goal?* (Carbonell, 1979, 1981) can be answered. Such examples correspond closely to Weiner's (1985) conclusion that spontaneous attribution processes are initiated when events are not subjectively anticipated. One might look forward with anticipation to the success of one's football heroes. However, when, as feared, dismal reality intrudes and they fail yet again, one typically initiates postmortems along with fellow

Low Consensus, Low Distinctiveness
Explanation: "Something about the person"

	S	$\bar{S}$
P	Target event: 1	Distinctiveness: 1
$\bar{P}$	Consensus: 0	Norm: 0

Low Consensus, High Distinctiveness
Explanation: "Something about the combination of the person with the stimulus"

	S	$\bar{S}$
P	Target event: 1	Distinctiveness: 0
$\bar{P}$	Consensus: 0	Norm: 0

High Consensus, Low Distinctiveness
Explanation: "Something about the person and something about the stimulus"

	S	$\bar{S}$
P	Target event: 1	Distinctiveness: 1
$\bar{P}$	Consensus: 1	Norm: 0

High Consensus, High Distinctiveness
Explanation: "Something about the stimulus"

	S	$\bar{S}$
P	Target event: 1	Distinctiveness: 0
$\bar{P}$	Consensus: 1	Norm: 0

Key : P = Target person present, $\bar{P}$ = Other target persons present
S = Target stimulus present, $\bar{S}$ = Other target stimuli present

Figure 1. Predicted attributions for data matrixes with empty cell norm.

devotees. Here one must resolve the mystery as to why one's heroes are not the football team of one's dreams.

Causal Questions and Counterfactual Contrasts

In sum, the major models of causal attribution can be construed as using the same logic of counterfactual reasoning to answer different causal questions as defined by varying contrast cases (see Table 1).

Thus, the covariational model (Kelley, 1967) and the inductive logic model (Jaspars et al., 1983) appear to be concerned with answering the question *Why did this event occur rather than not occur?* (Why X rather than not X?) In contrast, the abnormal conditions focus model (Hilton & Slugoski, 1986) answers the question *Why did this event occur rather than the normal case?* (Why X rather than the default value for X?) Jones and Davis's (1965) model seeks to answer the same question as the abnormal conditions focus model in its treatment of the role of target- and category-based expectancies (Jones & McGillis, 1976). However, in its analysis of the noncommon effects of action it also addresses the question *Why this choice rather than that choice?* (Why X rather than Y?) Attributions of responsibility are addressed to the question *Why did the actor do what he did rather than what he should have done?* (Fincham & Jaspars, 1980; Hart & Honoré, 1985). Schank and Abelson's (1977) model answers questions like *Why did this plan fail rather than succeed?* (cf. Weiner, 1985) and *Why did the actor value this goal rather than that goal?* (cf. Carbonell, 1979, 1981; Wilensky, 1983; cf. Jones & Davis, 1965).

What is common to all of these examples is that the explanations derived all answer a question as to why there is a *difference* between a target case and a contrast case. As Hesslow (1983)

Target event: "Ralph trips up over Joan dancing"

Explanation: "Something about Ralph" and "Something about Joan"

	S	$\overline{S}$
P	Target event 1	Distinctiveness 1
$\overline{P}$	Consensus 1	Norm 1/2

Target event: "Sally buys something on her visit to the supermarket"

Explanation: "Nothing special about Sally or the supermarket"

	S	$\overline{S}$
P	Target event 1	Distinctiveness 1
$\overline{P}$	Consensus 1	Norm 1

Key : P = Target person present, $\overline{P}$ = Other target persons present
S = Target stimulus present, $\overline{S}$ = Other target stimuli present

Figure 2. 2 × 2 matrixes for high consensus, low distinctiveness events as a function of presupposed norms.

pointed out, to understand a request for an explanation one must know the implicit contrast that it presupposes. The rest is logic.

Experimental Questions and Explanatory Relevance

My aim in this section is to show that conversational factors need to be considered in interpreting the responses subjects give in experiments designed to test the major models of the attribution process. This is because explanations given by subjects in experimental conversations with their scientific partners may be governed by considerations of logical presupposition and focus. First, I illustrate how subjects distinguish causes from conditions in the explanations they give. I then show how general considerations of logical presupposition and focus constrain the experimental procedures used to test the three major types of causal attribution model: the Jaspars et al. (1983) inductive logic model and Kelley's (1967) ANOVA model; Jones and Davis's (1965) correspondent inference model; and Heider's (1958) theory of personal causality.

Causes and Conditions in Experimental Conversations

Turnbull and Slugoski (1988) reported two experiments in which the effect of changing presuppositions on causal explanation was explicitly investigated. In the first experiment, subjects were given personality and situational information about a young offender that could explain his crime. They were then asked to explain the crime to confederates of the experimenter whom they were told possessed knowledge of either the delinquent's personality or situation, but not both. Subjects provided different explanations of the target event that complemented the hearer's prior knowledge. When the interlocutor had background information on the delinquent's personality, subjects received explanations that emphasized situational factors, and vice versa. In a second experiment, which used a within-subjects design, subjects changed their explanation of the same target event in the same way, as a function of the interlocutor's background. The changing explanations clearly obey conversational principles, in particular Grice's (1975) maxim of quantity, that stipulate that when the speaker and hearer share personality knowledge this is backgrounded as part of the presupposed *conditions* for the occurrence of the crime, and situational factors are focused on as *causes* that are worth mentioning in an informative explanation, and vice versa.

Consequently, the relevant explanation seems to be that which refers to the factor that makes the difference from the questioner's point of view between the target event and the backgrounded contrast case. In a similar vein, Gilovich, Jennings, and Jennings (1983) found that subjects showed considerable flexibility in referring to personal or situational factors that influenced their choices, depending on the focus of the experimenter's question (e.g., "how your personal characteristics, past experiences, or thoughts or feelings caused you to choose" vs. "how characteristics or aspects of [e.g., city or country life] caused you to choose").

Recognition of the role of conversational processes in causal explanation may also help account for otherwise anomalous results. For example, Quattrone (1982) found that when subjects were given information about an actor's dispositions that strongly predicted the behavior that had to be explained, subjects still rated situational factors highly in their explanations. Quattrone (1982, Experiment 2) also found that subjects who were given situational information that could explain the target behavior rated those situational factors less strongly as explanations of the event than did subjects who were not given situational information. Although problematic for contemporary models of social cognition (Higgins & Bargh, 1987), these re-

Table 1
A Typology of Causes, Contrast Cases, and Explanations

Type of cause	Type of contrast case	Type of implied question
Millian sum of necessary conditions	Nonoccurrence of effect	"Why X rather than *not X*?"
Abnormal condition	The normal case	"Why X rather than *the default value for X*?"
Differentiating factor	Noncommon effect	"Why X rather than *Y*?"
Moral or legal fault	Prescribed or statutory case	"Why X rather than *what ought to be the case*?"
Design fault or bug	Ideal case	"Why X rather than *the ideal value for X*?"

sults do not discompose the conversational model of causal explanation provided that one assumes that subjects are selecting the factor that they think differentiates the target event from the background information they share with the experimenter and that thus has the most *explanatory relevance* to the experimenter.

Sufficient Causes and Sufficient Explanations

One may consider the paradigmatic attribution experiment designed by McArthur (1972) to test Kelley's (1967) ANOVA model as a form of experimental conversation (cf. Hilton & Slugoski, 1986). For example, Hilton and Jaspars (1987) and Jaspars (1983) found that subjects given low consensus, high distinctiveness, and high consistency (LHH) and high consensus, low distinctiveness, and high consistency (HLH) information configurations tended to make attributions to a combination of the person and the stimulus. However, the "combination" implied by these two configurations is quite different. The LHH configuration implies attributions to the person and the stimulus as multiple necessary conditions that are only jointly sufficient, whereas the HLH configuration implies attributions to the person and to the stimulus as two individually sufficient causes (cf. McArthur, 1972). When given an explicit response option between these alternative interpretations, subjects do differentiate them as predicted (Hilton & Slugoski, 1986).

These two cases correspond to this distinction made by Kelley (1972, 1973) between the multiple necessary causes (MNC) and multiple sufficient causes (MSC) schemata. However, in terms of the present approach they would be better termed as describing the cases of multiple necessary *conditions* and multiple sufficient causes (cf. Hilton, 1988). This is because in the MNC case it is the combined sum of necessary conditions that constitute the *single* cause, "philosophically speaking" (Mill, 1872/1973). In the MSC case, each factor is sufficient to produce the effect, and thus, philosophically speaking, there are *two* causes.

If subjects regard the identification to the experimenter of one sufficient cause as adequate to fulfill their experimental task, then they will have to cite *both* the person and the stimulus in their explanations in the LLH (MNC) configuration, but only the person or the stimulus in the HLH (MSC) configuration. In fact, there is a significantly greater tendency to identify single person or stimulus factors in the explanation in the HLH (MSC) case (Hilton & Jaspars, 1987). Subjects thus seem to regard the identification of one sufficient cause as providing a complete explanation of the event and hence adequate fulfillment of their experimental task. Indeed, they may even regard the citation of two sufficient causes as overburdening the experimenter with redundant information.

Correspondent Inferences and Information Gain

Correspondent inference theory is congenial to the conversational model of causal explanation in that it already emphasizes the pragmatic function of information gain in the attribution process (Jones & McGillis, 1976). Thus, correspondent inference theory already specifies the role of norms in the attribution process in the form of social desirability (Jones & Davis, 1965) and target- and category-based expectancies (Jones & McGillis, 1976). Here I concentrate on its use of counterfactual reasoning in its distinctive analysis of the role of perceived decision freedom and noncommon effects on causal attribution.

Consider the case in which a person carefully and intentionally contrives a robbery. It is often argued that intentional actions are typically attributed to the person (e.g., R. Brown & Fish, 1983; Heider, 1958; Read, 1987). This may be true as a default assumption, but it begs the question, *Why?* Note that one would neither attribute responsibility to the robber nor dub him or her a criminal if one knew that he or she was acting under threat of death (cf. Hart & Honoré, 1985). One would instead say that the actor "had no choice" and was "compelled by the situation." In a telling phrase, one would say that "he or she could not have done otherwise," that is, there is no plausible counterfactual scenario in which he or she could have found a way out of the dilemma. No relevant contrast can be constructed in cases where there is no decision freedom, and no factor of the person can be examined that would have made the difference to the present case. No relevant explanation can be constructed.

The notion of control implies that the actor could have done otherwise (Dennett, 1984). Generally speaking, people have more control over the actions they perform than the emotions they experience and hence have more counterfactual alternatives for an action than an emotion. They attribute more causality to the person in the case of actions than in the case of emotions (R. Brown & Fish, 1983). However, the number of choice alternatives for an event correlated positively with dispositional attributions regardless of whether the target event was an action or an emotion (Gilovich & Regan, 1986). Thus, dispositional attribution does not seem to correlate so much with the intentionality of an event per se but with the number of choice alternatives for the person that it activates. Controllability implies counterfactual alternatives for the person and hence focuses on that person as the deciding factor between what is and what could have been (cf. Kahneman & Miller, 1986).

Consistent with the counterfactual analysis, Jones and Davis (1965) proposed that attribution proceeds by an analysis of the noncommon effects that make the difference between the action choices offered. Counterfactual contrast cases are explicitly specified by the experimenter. If Miss Bagby chooses an intellectual rather than an athlete as a husband, then one may infer that she herself is intellectual if one can presuppose that the competing suitors shared other kinds of relevant characteristics (handsome, clever, rich, etc.). The question here is not whether Miss Bagby's choice is due to the person or the situation, but whether her suitors have the relevant preconditions to enable Miss Bagby to attain her goal of enjoying her full share of marital happiness.

Personal Causality: The Explanation of Action

Heider (1958) stated the special properties of personal causality in terms that are very germane to the conversational model: "Attribution with personal causality reduces the necessary conditions essentially to one, the person with intention, who, within a wide range of environmental vicissitudes, has control over the multitude of forces required to create the specific

effect" (p. 102). The possession of the relevant intention is thus usually sufficient in the circumstances to produce the requisite effect, whereas other factors, such as the possession of adequate means in the form of having enough money to buy a meal and the provision of relevant opportunities such as the restaurant's being open are not ordinarily sufficient in themselves to make someone eat. Otherwise, everyone with enough money who passed a restaurant would stop in to eat. It is being hungry that makes the difference between stopping and not stopping in to eat.

Means and opportunities can normally be presupposed of a competent actor in a way that intentions cannot. In Kelley's (1967) terms, they are consensual and thus do not define abnormal conditions in the actor (Hilton & Slugoski, 1986). Means such as the possession of money and opportunities such as a restaurant's being open are thus mere conditions (Hart & Honoré, 1985) that typically are part of the causal field of backgrounded, necessary-but-not-sufficient conditions for the performance of an action (Mackie, 1974). In the language of Schank and Abelson (1977), intentions specify goals for which means and opportunities are the presupposed preconditions for attainment.

Intentions are typically abnormal conditions that make the difference to the outcome and are focused as the cause that is sufficient to explain the action (but see Hart & Honoré, 1985, Chap. 3, for cases where this does not hold true). Subjects do in fact distinguish between intentions and means and opportunities in this way. Leddo, Abelson, and Gross (1984) showed that subjects were more likely to rate intentions (goals) as more likely to be part of the actual explanation than means and opportunities (preconditions). More pertinent to the present analysis, Hilton and Knott (1988) gave subjects the same vignette situations as used by Leddo et al. (1984) in a conditional reasoning format, which allowed the discrimination of necessary from sufficient conditions. As predicted, Hilton and Knott found that subjects were more likely to consider intentions to be necessary and sufficient conditions for the occurrence of an action rather than preconditions, which were generally considered to be necessary but not sufficient conditions.

Thus, both Heider's (1958) schema for the naive analysis of action and its descendants (Jones & Davis, 1965; Schank & Abelson, 1977) can be brought under rules that govern conversational inference in a wide range of domains of discourse. Lower-level capacities are typically presupposed and not focused on unless they fail (cf. Vallacher & Wegner, 1987).

One general consequence of conversational rules is that subjects may omit factors from their explanations not because they believe that these factors do not have any causal role in producing an event, but because they consider them irrelevant to the question that they have been asked. Consequently, many biases in causal explanations may not reflect variations in underlying beliefs about causal processes, but may instead be due to the dynamics of interpersonal question–answer processes. The implications of this position for the question of attributional biases are considered in the following section.

Conversational Processes and Attributional Biases

The conversational model proposes that causal explanation proceeds by comparing a target case with a relevant counterfactual contrast case. As noted earlier, subjective presuppositions derived from general world knowledge may serve to select the relevant norms against which to contrast the target event. This model of the explanation process suggests that certain attributional phenomena may not reflect cognitive biases in information processing so much as the operation of conversational norms. These include the use of relevant world knowledge to supplement experimenter-given information and the use of linguistic conventions to define the focus of *why* questions.

Presupposed Norms and the Use of Base-Rate Information

Many studies have shown that subjects apparently fail to take base-rate information into account in a variety of judgments (e.g., Tversky & Kahneman, 1974). This research has led to the view that the layperson is a poor scientist who deviates from canons of rational scientific inference (Nisbett & Ross, 1980; Ross, 1977).

Paradoxically, the present analysis suggests that it is scientists who have not taken base-rate information into account, rather than subjects. This is because proponents of the ANOVA model of causal attribution have overlooked logical function of knowledge of norms in completing the experimental design required by the ANOVA cube (but see Pruitt & Insko, 1980, for an exception). Studies such as that of Hilton and Slugoski (1986) suggest that in attribution experiments, the scientist typically presents the subject with incomplete information that the subject then supplants with real-world knowledge about norms.

The fact that the subject uses his or her own real-world knowledge to complete the experimental design in attribution experiments also paints a different picture of the relation between subject-given and experimenter-given knowledge than that which is sometimes taken. For example, Alloy and Tabachnik (1984) and Higgins and Bargh (1987) considered subjects' judgments to be driven by the respective *strength* of prior expectancies as opposed to covariation information provided by the experimenter. In contrast to this essentially competitive view of the relation between implicit and explicit knowledge, the conversational perspective espouses a more cooperative relation between the two types of information. It is the *interaction* between the two in defining abnormalities and differences that is informative.

Use of Consensus and Distinctiveness Information

According to the conversational model of causal explanation, the relevant counterfactual contrast case for evaluating the causal role of the person is consensus information; for evaluating the stimulus, it is distinctiveness information. This differs from most models of the attribution process that posit person-distinctiveness and stimulus-consensus inferential links (DiVitto & McArthur, 1978; Hansen, 1980; Higgins & Bargh, 1987; Kassin, 1979; McArthur, 1972, 1976; Orvis et al. 1975).

However, there is good reason for believing that the kind of counterfactual reasoning process presupposed by the conversational model correctly describes subjects' behavior. First, the inductive logic model proposed by Jaspars et al. (1983), which assumes person-consensus and stimulus-distinctiveness infer-

ential links, fit causal inference data better than its rivals (Hewstone & Jaspars, 1987), especially in experiments with a full response methodology (Hilton & Jaspars, 1987; Jaspars, 1983).

Second, subjects' preference for distinctiveness information in answering causal questions about the person and for consensus information in answering causal questions about the stimulus (Alicke & Insko, 1984; Bassili & Regan, 1977; Garland, Hardy, & Stephenson, 1975; Hansen, 1980; Hortacsu, 1987; Major, 1980) may be more apparent than real. Consider the case of Arnold, a professional golfer, who gets 67 on the Norden golf course. Imagine that you are asked to evaluate how good a performance this is and are offered a choice of consensus information (how well other professional golfers do on this golf course) or distinctiveness information (how well Arnold does on other golf courses). Your response may well depend on whether you know the normal score for professional golfers on golf courses. If you already know that professional par is about 70, you would not need to ask for consensus information to determine whether 67 is a good score or not. Consequently, you might prefer to seek distinctiveness information to see how reliably Arnold produces good scores in order to check that his present performance is no fluke. Consistent with this analysis, subjects were more likely to seek distinctiveness information in response to causal questions about a person when they had been provided with such "sporting norms" about the average performance of the target class of athlete on the target type of course. "Normless" subjects were more likely to seek consensus information to answer causal questions about a person (Hilton, Smith, & Alicke, 1988).

The finding that "normful" subjects seek distinctiveness information in response to causal questions about the person, whereas normless subjects seek consensus information, is consistent with developmental data. Hortacsu (1987) found that children from 9–17 years of age show a developmental trend from normless to normful patterns of information acquisition. This is consistent with the supposition that adults acquire general knowledge in the form of norms, which relieves them of the need to acquire consensus information.

The conversational model of causal explanation thus alerts one to the possibility that subjects may strategically use their general knowledge about real-world norms to make suppositions about probable values of consensus and distinctiveness information and respond accordingly. This prompts a reevaluation of previous experimental results and the methods used to obtain them. It may be that subjects do need consensus information to evaluate the causal role of the person, but do not ask the experimenter for it because they are able to presuppose it from general world knowledge.

Manipulating the norms that subjects are able to take for granted thus has important implications for models of the attribution process. Indeed, one striking result obtained by Hilton et al. (1988, Experiment 1) was that 71 out of 72 subjects asked for consensus information when asked a causal question about the person in the normless condition. This result calls into question the finding that subjects underuse consensus information. If subjects underuse consensus information, why are they so interested in acquiring it? This result offers converging evidence for the conjecture that early findings that suggested that subjects underuse consensus information (McArthur, 1972; Nisbett & Borgida, 1975) may be attributable to shortcomings in the experimental procedures used (cf. Jaspars, 1988; Solomon, Drenan, & Insko, 1981), and that subjects *do* in fact use consensus information to make causal attributions.

Actor–Observer Differences in Causal Explanation

One of the best documented phenomena of attribution theory is the difference between actors and observers in causal explanation (Jones & Nisbett, 1972). Actors tend to explain events by reference to characteristics of the situation, whereas observers tend to explain events by reference to personal characteristics of the actor (Nisbett, Caputo, Legant, & Maracek, 1973; Watson, 1982). One possible explanation for this divergence is that actors and observers take different perspectives on an event (cf. Einhorn & Hogarth, 1986; Kahneman & Miller, 1986). In effect, an actor presupposes his or her presence as a constant background factor and asks him- or herself what is special about this situation that caused his or her behavior. In contrast, observers treat the situation as background and focus on what is special about the actor that differentiates him or her from other people in the same situation.

According to this logic, actor–observer differences in causal explanation result from differences in what subjects presuppose as background information and what they focus on in answering a *why* question such as "Why did you [your best friend] choose this major?" The causal questions asked by Nisbett et al. (1973) and others are ambiguous in this regard. It follows that if the causal question is disambiguated by specifying the relevant reference class for the target event, then the actor–observer difference should disappear. This is in fact what McGill (1989) found. She disambiguated the causal question by using the focus adjunct *in particular* (Quirk, Greenbaum, Leech, & Svartvik, 1972) to determine whether the person or the stimulus should be treated as the focus of the *why* question. Thus, subjects were asked "Why did you [your best friend] in particular choose this major?" (person focus, stimulus background) and "Why did you [your best friend] choose this major in particular" (person background, stimulus focus). Consistent with the conversational model, subjects gave explanations that were relevant to the explicit focus of the question; person-focused questions received person-focused explanations and stimulus-focused questions received stimulus-focused answers. No effect of actor–observer differences was found in the presence of this explicit focus manipulation. As McGill observed, these results are consistent with the view that actor–observer differences in causal explanation are due to the implicit focus that subjects assign to the *why* question in default of explicit focus and may not reflect differences in underlying beliefs about the true causes of behavior.

Explanations of Success and Failure

Another asymmetry in causal explanation addressed by McGill (1989) is the tendency to attribute success to internal factors and failure to external factors (Weiner et al., 1972). McGill suggested that this asymmetry may be due to differences in assumed contrast cases. According to McGill, a subject who succeeds at a task will not do any spontaneous attributional pro-

cessing, as the outcome is what he or she intended (cf. Weiner, 1985). However, when the experimenter asks the subject why he or she succeeded, the subject may assume that there is something noteworthy about that success, namely that he or she succeeded where others did not (low consensus). Consequently, the relevant reference class for success is assumed to be other individuals, and explanations refer to characteristics of the target person that differentiate him or her from others (e.g., ability).

Conversely, an individual who expects to succeed at the task but fails will engage in spontaneous attributional processing (Weiner, 1985). This person does not need the experimenter's question to specify a relevant contrast case as the outcome is unexpected. In particular, the subject contrasts the situation as it is to what the subject thought it might be. Consequently, failure prompts explanations that refer to characteristics of the target situation that differentiate it from other situations (e.g., task difficulty).

As well as predicting the well-known success–failure asymmetry, McGill's (1989) contrast-based analysis predicts more. In particular, the analysis predicts the converse cases where success will be attributed to situational factors and failure to personal factors. These are cases where the subjects expect to fail rather than succeed. Here, failure will meet expectations, and no spontaneous attributional processing will be initiated. The experimenter's *why* question will nevertheless suggest that there is something noteworthy about the present failure, for example, that few others failed (low consensus), thus suggesting a person explanation. Conversely, success violates expectations and prompts the contrast between the task and what it was expected to be, thus resulting in situational explanations.

To test this prediction, McGill (1989) gave subjects an anagram task and led them to expect that they were going to succeed or that they were going to fail at it. In addition, a third group of subjects were given no clear expectations of either success or failure (the ambiguous condition). After subjects had performed the task, they were arbitrarily given false feedback that indicated whether they had succeeded or failed. Consistent with McGill's analysis, subjects who expected to succeed attributed success internally and failure externally, whereas subjects who expected to fail attributed success externally and failure internally. Subjects in the ambiguous condition attributed success internally and failure externally, consistent with the supposition that subjects' default expectation is to succeed. As was the case with actor–observer differences, McGill's experiment indicates that asymmetries in causal explanation may be attributable to conversational factors rather than to different underlying beliefs about the causes of success and failure.

Implicit Questions and Explanatory Relevance

In this section, I briefly indicate how interpersonal and functional considerations determine the kinds of implicit questions that may be at issue in ordinary explanations. Such interactional questions may determine what a given explanation is relevant *to*. These include pragmatic considerations such as proof of one's assertions, proof of one's knowledge, and relevance to relationship goals.

Explaining Events and Justifying Assertions

Antaki and Naji (1987) analyzed all the *because* statements that occurred in 40 unobtrusively recorded natural conversations between middle-class British speakers. Only 9.9% of the *because* statements explained one's own or others' particular actions (e.g., "Yeah, but because of various circumstances, she worked her way in"). Another 9.9% explained one's own and others' states of mind, including both emotions and opinions (e.g., "Oh, I don't mind the NFT [National Film Theatre] itself, because you can usually get in"). Taken on face value, this study suggests that in ordinary discourse, the British middle class only answer the questions asked by the major theories of causal attribution in some 20% of their explanations. This figure may of course vary (up or down) according to the coding procedures used (interjudge agreement in the present study was not always high) and the population studied. It does, nevertheless, raise the issue as to how many types of naturally occurring questions are addressed by current social psychological models of causal explanation.

Here I discuss one category of causal explanation that is a priori beyond the scope of the classic models, but whose function is uniquely illuminated by the conversational model. This is where the speaker explains his or her own beliefs, which account for 5.7% of the explanations given. An example is "That's why I think it was here and not at home, and 'cos I don't remember watching that episode last year." In this example, the explanation is not being used to explain why the event did not happen at home, but to explain why the speaker is making his or her claim. The explanation is, in effect, providing *evidence* for a claim, and thus answering a request for proof of an assertion rather than making an assertion itself. The explanation is thus justifying an assertion rather than resolving a puzzle about why a particular event occurred. The logic is decidedly counterfactual ("If I *did* remember watching that episode last year, then. . . ."). However, to understand what question such explanations are relevant to, one must recognize the nature of the interactional context in which the explanation is located.

Such "justifications" are necessary when the speaker's reliability is called into question and when hearers do not presuppose that the speaker's utterances are guaranteed by Grice's (1975) maxim of quality to be sincere or adequately supported. In some U.S. presidential inquiries, such questions of accuracy arise. Consider the report of the Tower Commission investigating the White House's role in illegal arms shipments to Iran. "At another point, Mr. McFarlane said he distinctly remembered telling President Reagan in the hospital about the arms shipments 'because the President was wearing pajamas' " (Diamond, 1987). One must recognize that the explanation given serves to justify an assertion in order to realize that the fact that the president was wearing pajamas did not cause Mr. McFarlane to tell him about the arms shipments to Iran.

Children are often subjected to exam questions (Searle, 1969) in which Grice's (1975) maxim of quantity is suspended. The point of such interrogations is not to give the examiner information he or she needs to know, but to demonstrate competence to the examiner. Unsurprisingly, children view psychology experiments as forms of examination (cf. Donaldson, 1978). Thus, when asked "Why did the man fall off his horse?" a sensi-

ble answer for the child is to show how he or she too knows that the man fell "because he [the man] broke his arm." *Because* explanations are ambiguous. They can either explain why an event occurred or they can explain how one can tell that an event occurred. They serve two distinct interpersonal functions, one of giving an explanation of why one event was caused by another event and one of proof of the veracity of one's own assertions.[3]

Trabasso et al. (1981) reported an unpublished experiment by Simon that discriminated these two interpretations of *because.* Consistent with the present analysis, they found that children are more likely to select antecedents for *why* questions and consequents for *how can you tell* questions.

The distinction made by the present analysis between explaining occurrences and giving proof of an assertion thus resolves an issue that has perplexed generations of experimenters since Piaget. The literal form of the explanation misled inquirers into believing that children confuse causes and consequences. In fact, properly designed experiments show that children have a very firm grasp of the direction of causation (Bullock, Gelman, & Baillargeon, 1982; Shultz & Kestenbaum, 1984; Trabasso et al., 1981).

Common Knowledge and Attributional Response Formats

Attribution theorists have seldom, if ever, questioned the effect of the response formats that they use on subjects' explanations. Response formats may serve as important informational cues for subjects (Schwarz & Hippler, 1987). One possibility considered here is that response formats cue subjects as to whether the experimenter is seeking an informative explanation of an event or simply requires the subject to demonstrate his or her knowledge of the causes of that event, even if it does not mean saying anything new.

Knowledge shared between the experimenter and the subject may thus determine the causal explanations produced. Using a free response format, Lalljee, Watson, and White (1982) found that when situational factors were of a familiar nature, and thus could presumably be presupposed as shared background information, subjects produced more person explanations. Conversely, they produced more situational explanations when the persons were familiar. Subjects thus appeared to be trying to identify abnormal conditions that the experimenter would not already know from familiarity with either the person or the situation.

However, a subject's knowledge of the properties of the person or the stimulus interacts with the type of response format used to affect the attributions given. This is shown by some unpublished results obtained by Ben Slugoski, William Turnbull, and myself. We adapted an experiment by R. Brown and Fish (1983) that found that action verbs ("Ted helps Paul") consistently biased attributions to the person and emotion verbs consistently biased attributions to the stimulus ("Ted likes Paul"), using both dispositional rating measures ("Ted is the sort of person who helps people," "Paul is the sort of person whom people help") and free-response sentence completion measures ("Ted helps Paul because . . . he is a nice guy").

Note, however, that R. Brown and Fish (1983) gave their subjects minimal context; the person and the stimulus were only identified by their proper names (*Ted* and *Paul*). Ben Slugoski, William Turnbull, and I replicated this finding with contextless verbs; for example, subjects were likely to judge that "Maureen telephoned Sue" because "Maureen is the sort of person who telephones people" on a dispositional rating scale and also to complete the event stem with a subordinate clause that referred to the person as the actor (e.g., "because she wanted to tell Sue about her new boyfriend"). However, when one of the involved entities is identified by reference to a familiar social role ("Maureen telephoned the operator"), the patterns of response diverge sharply. Although subjects showed a strong preference to use the dispositional rating scale to judge that "Maureen telephoned the operator" because "the operator is the sort of person whom people telephone," the great majority referred to something about Maureen in their free-response sentence completions (e.g., "Maureen telephoned the operator because . . . she wanted an early morning wake-up call").

These results are quite consistent with the operation of conversational processes in causal explanation. Although subjects may judge operators to be the sort of person whom people typically telephone, and hence a strong covariate of telephone calls, it hardly counts as an informative explanation to tell that to the experimenter. When rating scales are given, however, subjects may interpret the request for an explanation as an "exam question" (Searle, 1969) in which they are required to display their knowledge to the experimenter, rather than to present him or her with new information.

However, when free-response sentence-completion techniques are used, subjects may seek to be informative and tell the experimenter something new. Thus, subjects will tend to focus on a characteristic of the named individual as the "abnormal condition" that prompted the action and to presuppose the existence of the role-identified individual.

The present results suggest that prior knowledge shared between the experimenter and subject interacts with the response formats chosen in significant ways. Moreover, these patterns of response are consistent with general discourse processes. Sanford and Garrod (1985) showed that focus and presupposition in text is determined by whether the involved entities are referred to by their individual names or by their role. Thus, in a story set in a restaurant, if an actor is referred to as "Antoine" rather than as "the waiter" or as "Mr. Creosote" rather than as "the customer," then the story will be interpreted as being about him. As attribution theorists move from using "silly sentences" (Abelson, 1976) to using more complex and realistic stimuli, the interaction between discourse processes and causal explanation will become even more intimate. Future research will do well to pay attention to these interactions.

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[3] In a closely related analysis, Davies (1979) distinguished between reasons for happening ("John slid on the ice because he felt cheerful") and reasons for knowing (e.g., "It was a Monday morning, because I had just started the washing"). As Davies pointed out, there are syntactic reflexes that mark the difference between these two types of locution. Thus, it is felicitous to say "Because he felt cheerful, John slid on the ice," but not "Because I had just started the washing, it was a Monday morning."

Interpersonal Goals and Causal Explanation

Using multidimensional scaling techniques, Passer, Kelley, and Michela (1978) showed that spouses categorized the causal explanation of a marital transgression differently if they were its perpetrator rather than its victim. Thus, one's own transgressions were differentiated according to whether they were unintentional or not, whereas one's partner's transgressions were categorized according to whether they were due to circumstances or temporary states rather than to the partner's enduring traits. However, consistent with other studies indicating the prominence of the pro- or antisocial motivation implied by an explanation (Wimer & Kelley, 1983), both one's own and one's partners' transgressions were interpreted in terms of whether they expressed a positive or a negative attitude to the partner.

A functional approach could easily explain such pragmatic (role-governed) variations. The most important question in marriage is the spouses' affection for each other. Hence, the most important facet of the explanation of a marital transgression is its diagnosticity as to the state of the actor's affections for his or her partner. Of secondary importance to the perpetrator is the question of whether he or she can change the behavior, hence the interest in whether the behavior is voluntary and changeable or involuntary and unchangeable. For the sufferer of the transgression, the relevant question may be about the extent to which he or she is going to have to put up with this behavior in the future. Hence, the sufferer would want to know whether the cause is of a permanent nature.

The preceding account of Passer et al.'s (1978) results is clearly open to alternative interpretations. However, it does illustrate the point that spouses may interrogate their cognitive representations of an event with different questions in mind, which lead to different types of contrasts between causes being drawn (e.g., voluntary vs. involuntary, stable vs. transient). *Subjective goals* may affect the kinds of questions asked and hence the kinds of causal categorizations made.

The ambiguities in the interpretation of such a naturalistic study can be overcome in experimental studies. Kruglanski, Hamel, Maides, and Schwartz (1978) varied the type of question they asked subjects such that information about internal–external causes (whether John had attended the movie on Saturday night because of his unique personality or the movie's properties) was relevant to one question (whether to buy tickets to a movie for oneself and a friend). In contrast, information about endogenous–exogenous causes (whether John's decision to attend the movie was an end in itself or a means of combatting loneliness) was relevant to another question that subjects were asked (whether to invite John to a Saturday night party). Subjects naturally expressed most interest in the information that was relevant to the question that they had been asked.

Conclusions

Summary

In viewing causal explanation as a form of social interaction, the conversational model represents a radical departure from traditional models that depict causal explanation as an asocial decontextualized process, as in the man-the-scientist analogy that has dominated attribution theory. Nevertheless, recent developments in explicating the logic of the lay scientist (Hewstone & Jaspars, 1987; Hilton, 1988; Hilton & Jaspars, 1987; Jaspars, 1983, 1988; Jaspars et al., 1983) have laid the foundations for the suggestion that the logic of the Millian scientist can be relativized to the constraints of ordinary discourse (Grice, 1975) through consideration of recent studies of commonsense and legal explanation given by ordinary language philosophers (Hart & Honoré, 1985; Mackie, 1974). From Hesslow's (1983, 1984, 1988) writings, one can derive a conversational model that specifies how causal explanations are selected by questions. This model provides a more powerful source of constraint on the selection of causes than previous approaches (e.g., Hilton & Slugoski, 1986).

In addition, the conversational model provides a badly needed integrative framework for attribution theory by showing how different models of the attribution process follow the same logic but address different questions. By distinguishing between causes and conditions, the conversational model resolves a variety of methodological puzzles for attribution theorists, as well as illustrating how commonsense causal explanation and action description are governed by some very general discourse constraints. Explicating the role of presupposed norms in causal attribution leads to new normative models and to a reconsideration of so-called biases in terms of basic conversational processes. In addition, the knowledge shared by experimenter and subject has palpable effects on the kinds of explanations produced, depending on the kind of response format used. Recognition of the role of conversational processes in causal explanation also enables a principled discrimination between explaining events and justifying assertions. Finally, in locating causal explanation in everyday conversation and interpersonal relationships, the conversational perspective moves the study of causal explanation to the heart of social life.

As well as providing an integrative framework for attribution theory and a new perspective on important issues such as judgmental biases, the conversational perspective opens up some new research questions for research into causal explanation. Some of these are discussed in the following section.

Causal Scenarios and Explanatory Relevance

The causal scenarios constructed by explanation-driven, story-understanding programs such as Wilensky's Plan Applier Mechanism (Schank & Abelson, 1977; Wilensky, 1978, 1981) describe the complete cause of the story outcome, philosophically speaking (Mill, 1872/1973). In other words, they explicate the full set of conditions necessary for the production of an event. The causal scenarios incorporate such vital but commonplace inferences as "Mary was hurt" as explanations for "Mary cried." A related approach to the analysis of story structures (Trabasso, Secco, & van den Broek, 1984; Trabasso & Sperry, 1985; Trabasso & van den Broek, 1985; van den Broek & Trabasso, 1986) has shown that an adaptation of Mackie's (1974) counterfactual test to determine the relations of necessity between story events predicts story summarization, recall, and event-importance judgments better than other formalisms derived from Schank and Abelson's model (Graesser, Robertson, & Anderson, 1981; Graesser, Robertson, Lovelace, & Swinehart, 1980). Despite the success of such analyses in explaining

and predicting how such networks of interlocking conditions are built up, they still do not tell one how to select causes from conditions. A theory of question-answering is still needed (cf. Lehnert, 1978).

The notion of explanatory relevance may help one to select "the" cause that satisfies a particular *why* question. In principle, it can apply just as well to the analysis of complex sets of interdependent conditions found in causal networks as it does to the analysis of sets of independent conditions presupposed by the scientific analysis of variance (cf. Kelley, 1983). As such, it promises to be a useful construct in studies that broaden the base of attribution research to include the analysis of the kinds of causal networks that underlie much everyday explanation.

Social Context of Causal Explanation

For an explanation to be relevant, it normally has to close a gap in the questioner's knowledge. This raises the problem of recognizing the focus of an interlocutor's question through appreciation of what knowledge he or she already possesses. Linguists have approached this general problem through the concept of mutual knowledge (e.g., Levinson, 1983). *Mutual knowledge* refers to the set of facts that two interlocutors may take for granted as shared. Mutual knowledge may derive from at least three sources. The first is knowledge of the other person's social category membership, and hence knowledge of what that person is likely to possess in terms of general knowledge of norms, facts, values, and so forth. The second source is the previous, shared experience of the interlocutors. This may take the form of knowledge about the other's personal history, as would be the case between friends or spouses (cf. Wegner, Giuliano, & Hertel, 1985). The third source is the knowledge of what has already been said in the current conversation and what still needs to be said. Shared information may be treated as *given,* and the speaker is required to add *new* information in order to make a cooperative contribution to a conversation (cf. Clark & Haviland, 1977).

One implication of this position is that many causal explanations are likely to be highly idiosyncratic and to be a function of group membership and the personal histories shared by interlocutors. Nevertheless, it is clear that the mutual knowledge shared (or assumed to be shared) between speaker and hearer will affect the formulation of causal explanations. Future attribution research on conversations about causes will need to explicate the role of relationship factors that affect the attribution of knowledge and interest to the other, and hence the explanations produced to complement the other's informational needs and interests.

Interpsychic and Intrapsychic Explanation

In interpersonal explanation, one typically fills a gap in *someone else's* knowledge; in intrapersonal explanation, one fills a gap in *one's own* knowledge (Hilton & Slugoski, 1986; Turnbull, 1986; Turnbull & Slugoski, 1988). Interpersonal causal explanation may therefore itself serve as a model for intrapersonal causal explanation. As well as explicating interpersonal aspects of overt, public explanations, the conversational model may also illuminate important aspects of covert, private explanations. This is because the same person can fulfill the same roles of the giver *and* recipient of a causal explanation. Here, a mental activity that was once an interpersonal transaction becomes an intrapersonal one (cf. Vygotsky, 1962, 1978). This correspondence is more clearly marked in languages other than English, where the expression *I wonder* is rendered as the reflexive *I ask myself.* Thus, one says *Je me demande* in French and *Ich frage mich* in German.

In its depiction of intrapersonal causal explanation as an internalized speech act, the conversational model is thus consistent with the view that mental processes are socially constructed. As such, the present approach is compatible with the views of Vygotsky (1962, 1978) and Luria and la Yudovich (1959), who viewed the higher mental functions as being due to the internalization of interpersonal functions. Such developmental evidence as there is is consistent with this view. For example, Frey and Ruble (1985) found that children show evidence of spontaneous verbal explanation at the age of 6 years that disappears by the ages of 7 and 9 years. This picture accords well with Vygotsky's (1962) observation that self-regulative external speech becomes internalized at about this age to become "inner speech."

Conversational Explanation and Social Cognition

The conversational perspective on causal explanation provides a view of cognition that is truly social in at least two senses. First, it explicates the interpersonal nature of causal explanation and shows how causal explanations are constrained by communication processes. Second, in suggesting that intrapersonal causal explanation may be an internalization of interpersonal processes, it conforms with recent positions on the social construction of mind (cf. Billig, 1987; Farr, 1987; Harré, 1984; Oatley & Bolton, 1985). Consequently, the conversational model of causal explanation proposes a view of mind that is quite different from that taken in contemporary attribution theory, which proposes an analogy with the experimental procedures of modern science that are so familiar to the contemporary social psychologist.

However, by changing the root analogy for causal explanation from that of experimental science to that of everyday discourse, psychologists may be doing nothing new. It was, after all, none other than Plato who conjectured that thinking is but "inward dialogue carried on by the mind within itself without spoken sound" (*The Sophist*).

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Publication Practices and Scientific Conduct

The recent disclosures of fraud in the conduct of research, reporting of research, or both in a number of scientific disciplines have prompted a widespread program of self-examination of publication practices and ethics.

The editor joins with APA in reminding authors of the principles of good publication practices and scientific conduct. Prospective authors are directed to the *Publication Manual of the American Psychological Association* (3rd ed.) and to the "Instructions to Authors" printed in this issue. The requirements of data availability, replicability, authorship credit, ethical treatment of subjects, and primary publication of data are important—they are meant to ensure responsible science and appropriate use of scarce and valuable resources.