Chapter II

The Causal Analysis of Knowledge a *la* Alvin I. Goldman

I

In the previous chapter we have discussed an important inadequacy in the traditional analysis of "S knows that p" as pointed out by Edmund L. Gettier. We have also hinted at several attempts made by philosophers to correct the deficiency. One of these requires that S knows that p only if there is a causal connection between the belief that p and the state of affairs described by p. This is the solution suggested by Alvin I. Goldman. The causal theory of knowing, introduced by Goldman, is conceived primarily as a response to the Gettier problem. In Gettier examples, a person, S, has a justified belief in something that is only coincidently true. This element of coincidence, which is perhaps the most salient feature of Gettier cases, is very difficult to explain without introducing some element of external connection between the individual's belief and the state of affairs which is the object of the belief. If the publication of Gettier's article is a turning point in the history of epistemology, publication of Goldman's "A Causal Theory of Knowing"[1] is another.

Goldman argues in the above paper that the Gettier problem arises because of the neglect of an extremely important factor in knowing, viz., the causal factor. It is not sufficient that the justifying propositions are true, or what is the same thing, they stand for some actual states of affairs; it is necessary that these states of affairs are related by way of appropriate causal connections with the beliefs which they are supposed to

justify. Thus, the theory in its simple form is that beliefs caused in the appropriate way are justified. Goldman proposes to delimit the application of his theory to knowledge of empirical propositions only, the traditional analysis being, according to him, adequate for knowledge of non-empirical truths.[2] In the domain of empirical knowledge too, basic empirical propositions, that is, propositions relating to knowledge of directly evident truth are, it appears, excluded from the ambit of his analysis. For, the question of justification is truly relevant and can arise significantly, only with respect to what is generally known as non-basic knowledge. A belief is a piece of non-basic knowledge if and only if it is a case of knowledge because some other statement justifies it. Hence, the causal theory of knowledge is not set out in all generality, applying to any and all knowledge.

Let us look at Gettier's second counterexample once again. Analysing Gettier's second counterexample Goldman observes that Smith believes (q) Jones owns a Ford for which he has strong evidence and seeing that (q) entails p. Either Jones owns a Ford or Brown is in Barcelona, Smith infers that p is true. Since he has adequate evidence for q he also has adequate evidence for p. But it might be that Jones does not own a Ford, and by quite a coincidence, Brown happens to be in Barcelona. That means that p is true, that Smith believes p and that Smith has adequate evidence for p. But Smith does not know p. To account for Smith's not knowing p Goldman says, "... what *makes p* true is the fact that Brown is in Barcelona, but that fact has nothing to do with Smith's believing *p*. That is, there is no *causal* connection between the fact that Brown is in Barcelona and Smith's believing *p*".[3] According to Goldman, "... one thing that seems to be missing in this example is a causal connection between the fact

that makes *p* true [or simply: the fact that *p*] and Smith's belief of *p*. The requirement of such a *causal connection* is what I wish to add to the traditional analysis."[4]

Since the basic principles involved in Gettier's two counterexamples, called Case I and Case II by him, are the same, Goldman's diagnosis of the *ailment of Case II* also applies to Case I, although he does not discuss it. Let us look at it. We see that Smith believes that the man who will get the job has ten coins in his pocket, not because he knows or believes that he himself will get the job and has ten coins in his pocket, the fact that makes his belief true, but he believes this because he believes that Jones is the man who will get the job and Jones has ten coins in his pocket – a belief which is, in fact false. Thus, what makes Smith to believe what he believes is not what makes his belief true, and what makes his belief true is not what makes Smith to believe what he believes ..."[5] They fall apart. Goldman's interpretation would be this is so because there is no causal connection between them. The causal connection seems to give the right judgment in such cases; it shows us why they are not cases of knowledge.

Goldman, thus, formulates the analysis of knowing as follow: S knows that p if and only if the fact p is causally connected in an "appropriate" way with S's believing p.[6]

Goldman, however, does not immediately proceed to give us an analysis of S knows that p. He postpones it till he has examined a variety of cases of such causal connection. And almost ten pages later he comes forth with his proposal

The traditional attempts confer the status of "justified" on a belief without restriction on why the belief is held, i.e., on what causally initiates the belief or causally sustains it. Many of the counter-examples that cropped up in connection with

the Gettier problem are not causal in character. We shall go into all the details of Goldman's proposal to be clear about the full significance of the causal theory of knowledge. This theory has taken its place alongside causal theories of perception, memory and action, and is a member of such a family of theories. Goldman tells us that the causal theory of knowing was anticipated by H. P. Grice's "The Causal Theory of Perception."[7]

Goldman is not interested in the details of the causal process. As an epistemologist he need not. But to understand his theory, it is necessary to bear in mind that in his present article he includes states of affairs, events, facts, beliefs, etc., in his conception of "cause". His account definitely does require that "the appropriate kind" of causal connection should exist between the fact that p and S's belief that p. But why? Why would not just *any* causal connection suffice? To require only that there be some causal connection would open the theory up to modified Gettier-like counterexamples, like the following sort of case:

> Smith is in Indonesia, an earthquake prone country. He is buying newspaper from a newsstand. Suddenly, a newspaper falls off the stand. Smith sees the headlines. It reads, "Earthquake hits Indonesia". Smith now believes that an earthquake has just hit the place. His belief is justified because he reads the headlines. What is more, it is actually the case that an earthquake has just hit Indonesia. Thus, Smith's belief is true. However, the newspaper Smith reads is actually an old one, ten years old. But Smith's belief that an earthquake has just occurred is caused by this earthquake because the paper's

falling from the rack is caused by an earth tremor resulting from the earthquake.

Examples of this sort put pressure on the causal theorist to elaborate the requirement that the fact that p must cause the belief that p. He will have to say that the fact must cause the belief *in the appropriate*, i.e., *in the right sort* of way.

Epistemologists have always recognized the importance of causal processes involved in our knowledge of things. In discussions of perception, memory and reasoning, for example, it is commonly assumed that these ways of coming to know are fundamentally causal. We perceive things and come to have knowledge about them *via* complex causal processes; memory is, at least in part, the retention of previously gained knowledge through some sort of causal process; and reasoning is a causal process that takes beliefs as inputs and generates beliefs as outputs. Naturally, in trying to spell out the idea of an "appropriate" causal connection and making it more precise, Goldman thinks that we can do no better than give examples, that is, we must examine the important kinds of such causal connection that enter into different cases of knowing like perception, inference, memory, etc., and he represents his contention through diagrams.

In perception, our ordinary concept of sight includes a causal requirement. It is shown by the fact that if the relevant causal process is absent, if the object allegedly seen plays no causal role in the formation of the perceiver's belief, we withhold the assertion that S *saw* such-and-such[8]. Let us illustrate that with Goldman's hologram example. When a subject S is said to see a vase before him, there must obtain a certain kind of causal linkage between the presence of the vase and S's belief that there is a vase before him. The causal process is a necessary condition of our saying that so and

so sees such and such. If the relevant causal connection does not obtain, we cannot say that a subject S sees a vase in front of him. For example, if a laser photograph is put between the vase and the perceiver, and the photograph is illuminated by a laser beam, it looks to S exactly like a real vase, though it is numerically different from the real one. S forms the belief that there is a vase in front of him. But we cannot say that S sees a vase in front of him for his view of the real vase is completely blocked by the interposed laser vase so that it has no causal role in the formation of his belief. We deny that S sees a vase before him.

In analogous fashion, causal connections obtain in cases of knowledge by memory and testimony. For Goldman, remembering, like perceiving, must be regarded as a causal process.[9] S remembers p at time t^2 only if S's believing p at an earlier time t^1 is a cause of his believing p at t^2. To this we can add knowledge-producing (or knowledge-transmitting) mechanisms like inference and testimony.

Appropriate causal connection is shown to occur in cases of inferential knowledge. When someone bases his belief of one proposition on his belief of a set of other propositions, then his belief of the latter propositions can be considered a cause of his belief of the former. Goldman takes 'inference' in a rather wide sense than it is used ordinarily. It is not an explicit, conscious process of reasoning. He recognizes the importance of inferential knowledge and the role that justification plays in it. He says:

> ... much knowledge is based on inference. As I shall use the term 'inference,' to say that S knows that p by 'inference' does not entail that S went through an explicit, conscious process of reasoning. It is not necessary that he has "talked to himself", saying something like "since such-and-such is true, p must also be true". My belief that there is a fire in the neighbourhood is based on, or inferred from, my belief that I hear a fire engine. But I have not gone through a process of explicit reasoning, saying "There is a fire engine. Therefore there must be a fire". Perhaps the word 'inference' is ordinarily used only where explicit reasoning occurs; if so, my use of the term will be somewhat broader than its ordinary use.[10]

In explaining inference, Goldman, in addition to an appropriate causal connection, speaks of a "continuous causal chain". Let us state Goldman's example to clarify what he means. Suppose *S* infers that a nearby mountain erupted centuries ago on the basis of his perception of solidified lava strewn over the countryside and his background belief of lava. Suppose this is a true proposition and *S* is justified in accepting it on the basis of the evidence he possesses. Now, whether or not this is a case of knowledge will depend on the nature of the causal process that induces his belief. It rests upon the presence of a continuous causal chain from the fact that the mountain had erupted at such and such a time in the past to *S*'s belief of the same now. If there is no such causal chain, however, *S* does not know. To put it in Goldman's

words, "*If there is a continuous causal chain of the sort he [S] envisages connecting the fact that the mountain erupted with his belief of the fact, then S knows it. If there is no such causal chain, however, S does not know the proposition*".[11]

The example developed here, by Goldman, illustrates the intuitive appeal of his proposal. The naturally intuitive appeal of the example given by Goldman is confirmation that Goldman's causal theory captures, at least, part of what we require for knowledge. The necessity of the continuous causal chain becomes evident if we consider a variant case. Suppose long ago a mountain erupted, and as a result, there was lava all around. Now suppose that after the volcano has erupted, a man, for some reason or other, removes all the lava from the mountainside. Long after, a different man, not knowing the real volcano, brings the lava there, and puts it all around to give the place, say for tourist attraction, an appearance of a mountain eruption. S perceives this lava, and infers that a mountain erupted here long ago.

In this case, S cannot be said to know the proposition. This is because the fact that the mountain did erupt is not a cause of S's believing that it erupted. In the suggested variant of the lava case, there is no continuous causal chain connecting (p) the fact that the mountain erupted to S's belief of (p). Goldman concludes that in the variant case, S cannot be said to know. "A necessary condition of S's knowing *p* is that his believing *p* be connected with p by a causal chain."[12]

Moreover, besides a continuous causal chain, knowledge by inference requires that (i) the knower's inference must be warranted[13] and (ii) the knower must reconstruct important links in the causal chain.[14] The first means that the propositions on which he bases his belief of p must genuinely confirm p very highly. They must be highly trustworthy. Merely lucky guesses do not yield knowledge. The second means

that the fact and the belief need not be directly related by a causal relation, for the causal chain might be a very unusual one. The fact may be a causal ancestor of S's belief that p, where these are not in direct causal relation, S must be able to reconstruct the relevant causal chain. It may be asked, what does reconstruction of links in the relevant causal chain mean? How to determine the importance of links in the chain? Goldman's answer is that "Clearly we cannot require someone to reconstruct every detail ... On the other hand; it is difficult to give criteria to identify which details, in general, are 'important.' This will vary substantially from case to case."[15] Goldman says further, "Though he [S] is not required to reconstruct every detail of the causal chain, he must reconstruct the important links."[16]

At this juncture, the question can be legitimately raised: Are the grounds of inference and the inferred conclusion causally related? Although Goldman does not give any definite answer, he does go on to say, quite firmly, that "...if a chain of inferences is 'added' to a causal chain, then the entire chain is causal."[17] In a further clarification of the notion of a "causal chain" Goldman adds that causal chains with an admixture of logical connections would amount to causal chains too. It can be stated as the principle "If *X* is logically related to *Y* and if *Y* is a cause of *Z*, then *X* is a cause of *Z*."[18] The reasons for these complications are amply illustrated in his paper. The introduction of this principle, Goldman avers, is necessitated by Keith Lehrer's counterexample and by universal generalisations. Keith Lehrer introduces the counterexample in the early discussion of Gettier problems. Suppose, Smith correctly infers that someone in his office owns a Ford, from some true evidence that justifies the false belief that a colleague, Mr. Brown, owns a Ford. It so happens that another

colleague in Smith's office, Mr. Jones, does own a Ford, but Smith has no evidence one way or another for this proposition.[19]

Suppose Smith bases his belief of

(p) Someone in his office owns a Ford on his belief of four propositions:

(q) Jones owns a Ford

(r) Jones works in his office

(s) Brown owns a Ford

(t) Brown works in his office.

In fact, Smith knows q, r and t, but he does not know s because s is false. Here, although not all of Smith's grounds for p are true, yet enough of them are, to ensure at least one causal connection between p and S's belief that p. Smith thinks that he knows in two ways via his knowledge of the conjunction of q and r and *via* his knowledge of the conjunction of s and t. He does not know p *via* the later conjunction because s is false. But he knows *via* the former conjunction, and that is enough. Here the fact q and r is, in turn, logically related to the fact q and, by inference his belief of q and r and of p. Similarly, r is a cause of S's belief of p. Hence, by the above principle, p is a cause of S's belief of p. Since Smith's inferences are warranted even setting aside his belief of s and t, he knows p.[20]

How can there be such a thing as knowledge of universal truths of the form, all men are mortal? Jonathan Dancy expresses this objection saying "My belief that all men are mortal is caused, but not by the fact that all men are mortal, if any facts cause it they are the facts that this man, that man, etc, have died."[21]

Goldman would answer in a way similar to the answer to the first question. The universal fact that all men are mortal causes our belief thereof. The fact that all men

are mortal is logically related to each of its instances: John's being mortal, Oscar's being mortal, George's being mortal, etc. S's belief that all men are mortal is warranted because he infers it from seeing John dying, Oscar dying, George dying, etc. Now each of the above facts is a cause of our belief that all men are mortal. Further, since the universal fact that all men are mortal is logically related to each of the particular facts, this universal fact is a cause of S's belief in it. Hence, S can be said to know that all men are mortal.[22] On the causal theory, thus, we can make sense of the claim that I know that all men are mortal. Again, this depends on Goldman's assumption that "causal chains with admixtures of logical connections are causal chains." We may note that Goldman's way of arguing also answers Peter D. Klein's objection that "there appears to be no causal chain that can be traced from the mortality of all men to S's belief therein." [23]

Goldman develops these several types of causal connection without claiming that the list is exhaustive. The appropriate causal connection between the fact p and the belief p does not necessarily mean that the fact p is a cause of the belief p. Otherwise; the causal theory would not be in a position to deal with many kinds of knowledge, e.g., knowledge of the future. People do ordinarily claim to know things like I will go to take my bath in the next ten minutes, or that some students will turn up for the epistemology lectures. But how can the facts in question be said to cause one's belief in each of these? (Arguably, those facts do not even obtain yet at the time of speaking). Should we say with the skeptic that the knowledge of the future is impossible? Goldman is aware of this problem. Indeed, this is exactly why he uses the above formulation. "The analysis", he says, "requires that there be a causal connection between *p* and *S*'s belief, not necessarily that *p* be a cause of *S*'s belief that *p* and *S*'s

belief of *p* can also be causally connected in a way that yields knowledge if both *p* and *S*'s belief of *p* have a *common* cause."[24] Goldman uses an example to illustrate this as follows:

T intends to go downtown on Monday. On Sunday, T tells S of his intention. Hearing T say he will go downtown, and having good reasons to believe that T is a reliable sort of person who rarely says what he does not mean, S infers that T really does intend to go downtown on Monday, and from this S concludes that T will do so. Now suppose that T fulfills his intention by going downtown on Monday. Can S be said to have known that he would do so? It is a kind of case where we ordinarily would allow after the event that S did know this. T's going downtown on Monday obviously cannot be said to be the cause of S's belief the previous day. Nevertheless, there is a *common* cause of T's going downtown on Monday and S's belief that T would go downtown, viz., T's intending (on Sunday) to go downtown the next day.[25] If we agree with Goldman that 'if a chain of inferences is "added" to a causal chain, then the entire chain is causal', then we can also agree that S's belief is causally connected to T's visit. It is just the sort of case where after the event S would be likely to say that she *knew* that T would go downtown on Monday, and not just she *believed* it. And it is the kind of case where we ordinarily could allow that she did *know* this. This case is surely a reasonable candidate for knowledge about the future.

The principle kinds of causal connection are what he calls "Pattern 1" and "Pattern 2". While the causal chain in perception is of Pattern I, a causal chain of Patter 2 is exemplified by the above examples, that is, empirical universals and existential generalizations such as "All men are mortal" and "Someone in the office owns a Ford".

After considering the different cases of appropriate causal connections Goldman wants to keep the class of causal connection open to make room for species of causal processes which are controversial or not admitted as standard cases of knowledge, like extra-sensory perception, or knowledge of our mental states.

Goldman explicates that he has taken a truth condition approach , that is, stating the necessary and sufficient conditions for saying that " S knows that p". He is not interested in the meaning of the word 'knows' or of the sentence (-schema) "*S* knows that p".[26] He is of the view that giving the correct set of truth-conditions for "*S* knows that *p*", is no part of providing the verification condition, namely, purporting to state the procedures for *finding out* whether a person knows a given proposition. He also is not inclined to view his epistemological position as one of answering the skeptic. For this is not 'one of the jobs of giving truth conditions for "*S* knows that *p*"'. What then are the truth-conditions, that is, the necessary and sufficient conditions? On his own admission in "A Causal Theory of Knowing" the causal connection is what he wishes to add to the traditional analysis; he does not make plain his intention to 'substract' or 'leave out' the conditions accepted. That is, besides the truth and justification conditions there will be the *additional* condition of the causal connection between the belief p and the fact p. Goldman does not speak of replacing the justification condition but speaks of adding the requirement of the *causal* connection to the traditional analysis. He says, "A *necessary condition* of *S*'s knowing *p* is that his believing *p* be connected with *p* by a causal chain."[27] Each of the conditions including the causal conditions is a necessary condition and together they constitute the sufficient conditions for "S's knowing that p.

The causal theory of knowing, since its formulation has attracted critical attention of philosophers in the way of pointing out its shortcomings, proposals for revising it or subsuming it to a larger theory of explanation. It can be said that in Gettier's examples as well as 'ordinary' cases in which we would tend to ascribe knowledge to individuals, the causal theory provides a clear and intuitively appealing account of knowledge. This, however, should not make us oblivious of the difficulties, some of them serious, of the causal theory.

It may be pointed out that epistemological questions are not causal or genetic questions but questions of logic and justification. Goldman himself anticipates this very important point in the concluding paragraph of "A Causal Theory of Knowing" and gives his responses to it. He says:

> The analysis presented here flies in the face of a well-established tradition in epistemology, the epistemological questions are questions of logic or justification, not causal or genetic questions. This traditional view, however, must not go unquestioned. Indeed, I think my analysis shows that the question of whether someone knows a certain proposition, is, in part, a causal question, although, of course, the question of what the correct analysis of "S knows that p" is not a causal question.[28]

It may be said in support of the causal theory that whether someone knows a certain proposition is, in part, a causal question. A man's failure to know is often due to some peculiarity in the causal links, the evidential belief and the event in question. There may be failure of knowledge in case where the causal chain is impeccable but the evidential support is inadequate. This shows that knowledge of specific event and state of affairs is a matter of both causal and epistemic considerations and claims to knowledge may be vitiated by defects of either type.

Peter D. Klein's objections to the causal strategy is designed to show that a causal theory of knowledge cannot provide an adequate analysis of inferential knowledge. He explores the vulnerability of inferential knowledge within the causal framework. A person S knows that p inferentially if and only if S knows that p and S's belief that p is caused by some other belief S has, for example, the belief q. The causal chain with admixtures of inferences and logical connections are causal chains too. We have seen that essential to Goldman's analysis of empirical universal and existential generalization is the following principle:

P: If *X* is logically related to *Y* and if *Y* is a cause of *Z*, then *X* is a cause of *Z*.

This principle is an admixture of inference and logical connection. According to Klein, this principle is not acceptable, even though, he recognizes its importance for Goldman to let him account for the variety of empirical propositions we know. "The principle is clearly incorrect", he says.[29] *S* knows that *p*" is not a causal question. For, what appears to Goldman to be a clearly desirable result of the application of this principle will probably appear to others to be a *reduction ad absurdum* of it.[30] In the ordinary sense of 'cause' it is simply not true that S was

causally affected by the mortality of all men. For there appears to be no causal chain that can be traced from the mortality of all men to S's belief therein.

We have already discussed Goldman's response to such objections. What is Klein's further objection to Goldman's causal account is that "...if his approach is to be generalized so as to include everything we know inferentially, we will have to develop some rather ingenious ways of augmenting the causal order of events. Some mathematical propositions are known by inference. So we must have appropriate facts referred to by those propositions to serve as causes of believing the propositions. But then we are to expand the sense of 'cause' to account for our knowledge of mathematical propositions ... But whether a new and expanded sense of 'cause' would be so encyclopedic as to rob the causal theory of its explanatory power and initial credibility remains to be seen."[31]

A more serious objection of Klein's is that causal strategy cannot exclude Gettier-inspired counter examples. And he brings in the original version of the Grabit case, the case where the mother was not introduced. Suppose S sees a man remove a book from the library by concealing it under his coat. S is sure that the man is Tom Grabit whom he has often seen before. He reports that he knows Tom Grabit stole the book. S knows because Tom stole the book, S has sufficient evidence to justify the belief and the belief is appropriately caused. Suppose now, that unknown to S Tom Has a twin brother, John who is a kleptomaniac and he was at the library on the day in question at the same time as Tom and stole a copy of the same book. "In that case, even though all the necessary conditions of knowledge are satisfied, S would fail to know, since the belief is fortuitous."[32] This is so because the evidence that S has for his belief that Tom stole the book is not conclusive evidence. For it is clear that the

evidence does not guarantee that Tom stole the book. It is not completely truth-preserving. S's evidence is that he sees a Tom-like person and infers that it is Tom.

Klein compares Goldman's account of inferential knowledge with D.M. Armstrong's and comes to the conclusion that no causal theory of knowledge can provide an adequate analysis of inferential knowledge. A properly constructed defeasibility theory, according to him, is able to provide such an account. A defeasibility analysis is able to preserve the benefits of the causal theories and does not suffer from their defects.[33]

The causal connection has faced other difficulties. Gilbert Harman[34] has pointed out that not every causal connection, specially, in the extended sense made out by Goldman, that is, counting logical connections among the causal connections, is relevant to knowledge. If every such connection were relevant, then, on Goldman's analysis, knowledge would be reduced to true belief, since there would always be a relevant 'causal connection' between any state of true belief and the state of affairs believed in. Goldman avoids this identification of knowledge with true belief by saying that in inferential knowledge relevant causal connections in the inference must be "reconstructed". S knows that one of her friend's owns a Ford only if her inference reconstructs the relevant causal connections between evidence and conclusion.

But what does "reconstructing" the relevant causal connection in the inference mean? -asks Harman. It means one must infer or be able to infer something about the causal connection between his conclusion and the evidence for it. We may try to understand the situation in the light of an example.

Nogot presents Mary with evidence that he owns a Ford. She infers that one of her friends owns a Ford. But her conclusion is true not because

Nagot owns a Ford, but because Havit does. Mary fails to know because the causal connection is lacking. Her second conclusion, Mr. Havit owns a Ford is a reconstruction of the causal connection. But how detailed must her reconstruction *be*? If she must reconstruct every detail of the causal connection between evidence and conclusion, she will never gain knowledge by way of inference. If she needs only to reconstruct some 'causal connection' she will always know, since she will always be able to infer that evidence and conclusions are both entailed by their conjunction. However, Goldman's remark about reconstructing the causal connection has to do with its being warranted, a process of reasoning which does not involve false conclusion. Accordingly, it is possible to turn Goldman's theory of knowledge into a theory of inference. Harman proposes that a better account of inference emerges if we replace "cause" with "because". On this revised account we infer not just a statement of the form X causes Y but, more generally, a statement of the form *Y, because X* or *X explains Y.* Inference to a causal explanation is a special case of inference to the best explanatory statement. Such change from "cause' to 'because' apart from its other advantages, provides a sufficiently plausible account of Goldman's treatment of knowledge of generalizations. On this revised account the causal connection between the belief that all emeralds are green and the fact that all emeralds are green is conceived as explanatory. "Although there is no causal relation between a generalization and those observed instances which provide us with evidence for the generalization, there is an obvious explanatory relationship. That all emeralds are green does not cause a particular emerald to be green; but it can explain why that emerald is green. And. other things being equal, we can infer a generalization only if it provides the most plausible way to explain our evidence."[35]

We may note how Goldman's theory of inferential knowledge receives two different treatments. While Klein opines that it is defective, Harman sees the possibility of its being developed into a theory of inference to the best explanation.

Section II

Goldman's "Discrimination and Perceptual Knowledge"[36] is a descendent of his early paper "A Causal Theory of Knowing". In this later paper Goldman presents a theory of non-inferential, i.e., perceptual knowledge. He attempts to refine the initial version of his causal account of knowing by introducing the notion of reliability. He is prompted to do so to accommodate cases where neither the traditional justified-true-belief account of knowledge nor his own causal analysis is of any help. Goldman still adheres to the causal theory seeking to explicate knowledge by reference to the causal processes that produce beliefs. However, he gives up the requirement that a knower's belief that p be *causally connected* with the fact or state of affairs that p. He raises the question: What species of causal processes or mechanisms must be responsible for a belief for it to count as knowledge? In answer to this the new idea of 'reliability' is introduced. Goldman says: "There must be mechanisms that are in an appropriate sense, 'reliable'". It appears that Goldman is seeking to replace the notion of 'appropriate causal connection' by 'causal reliabilism'.

What, then, is his idea of 'reliability'? As a first approximation reliability consists in the tendency of a process to produce beliefs that are true rather than false. The idea behind the reliability theory is simple and attractive. It says that a belief is justified if and only if the process leading to that belief is reliable. There are a variety of cognitive processes that result in beliefs. Some of these processes are reliable. They generally yield true beliefs and the beliefs they produce are justified. Other processes

are unreliable and the beliefs they produce are unjustified. Goldman explicates the idea of a reliable cognitive process saying, "... a cognitive mechanism or process is reliable if it not only produces true beliefs in actual situations, but would produce true beliefs, or at least inhibit false beliefs, in relevant counterfactual situations."[37] In the following paragraph he also says, "To be reliable, a cognitive mechanism must enable a person to discriminate or differentiate between incompatible states of affairs. It must operate in such a way that incompatible states of the world would generate different cognitive responses."[38]

What is the motivation for a reliable approach to knowledge or belief formation? A belief does not qualify as knowledge even if it happens to be true if the style of belief formation/production is error-prone or unreliable. If, however, the belief-producing process is reliable that helps qualify the belief for knowledge. All the faulty belief-forming processes like confused reasoning, wishful thinking, reliance on emotional attachment, mere haunch or guesswork have belief outputs which would be classified as unjustified. What do these faulty processes have in common? They share the feature of unreliability. The reliable cognitive processes include standard perceptual processes, memory, good reasoning and introspection. The beliefs they produce are generally true. The reliability of the process or processes that causes a belief also confers the status of knowledge on that belief. That Goldman has not given up his earlier theory of causal processes as the producer or sustainer of belief is clear from this. Granted that principles of justified belief must make reference to cause of belief, what kind of causal process confers the status of knowledge on beliefs? The answer is: It must be a reliable cognitive process, - the belief be caused, or causally sustained by a reliable cognitive process. There may be the possibility of endorsing a

reliability requirement for belief without endorsing a causal requirement. But Goldman in the paper we are concerned with here, maintains a causal reliabilist position.

Aside reliability, Goldman introduces, in the course of developing his theory, expressions such as "discrimination" "relevant alternative", "relevant counterfactual situation", "perceptual equivalence", etc. And they need careful analysis. And this is what we propose to do now.

According to Goldman, the reliable cognitive mechanism is a mechanism capable of discrimination. This Goldman seeks to illustrate with reference to our perceptual mechanism. In fact, true to the title of his paper, Goldman concentrates exclusively on perception not aspiring any more to account for other forms of knowledge. He stresses upon the "discrimination" theme as associated with one sense of the verb 'to know.' The O.E.D, he tells us, lists "one (early) sense of 'know' as 'to distinguish' (one thing) from (another)."[39] This dictionary meaning is important because it throws light on what is involved in attribution of knowledge to someone. A person S is said to know that p only if the causal process forming his belief that p is reliable. And a causal process is said to be reliable if the subject distinguishes or discriminates the truth of p (the proposition he claims to know) from relevant alternatives to p. This is the causal reliabilist approach to knowledge.

The question that arises at this stage is: What alternatives are relevant alternatives? At the first blush, relevant alternatives are possible alternatives to the actual state of affairs. But this is not very informative. Any number of possible alternatives to a given state of affairs is logically conceivable. It is not very helpful to say that the subject S in forming beliefs about the world is required to discriminate all logically possible alternatives. In deciding whether someone knows that p we do not

require him to distinguish p from all logically possible alternatives. Goldman is, of course, not forthright with what alternatives are or ought to be considered. He proceeds immediately to clarify the role of discrimination in conferring the status of knowledge, to decide whether someone knows something or not, with the help of an example:

Henry is driving along the countryside and comes across objects which have characteristic features of a barn and identifies one as a barn. Henry has good eyesight, the object is fully in view and the identified object has features characteristic of its type. With this information it seems we can safely concede knowledge to Henry that the object he sees is a barn.

Now Goldman asks us to imagine that, unknown to Henry, the district he first entered is full of papier-mâché fascimiles of barns. They are so cleverly constructed that they are invariably mistaken as real barns. Given this new information we would be inclined to withdraw the claim that Henry *Knows* that the object he sees is a barn.

Before we come to Goldman's gloss on that example, we may note that we get from it an inkling of what a 'relevant alternative' is supposed to be. It is a similar enough alternative. Among the possible alternatives to the actual state of affairs the closest is the relevant alternative. So copies, facsimiles, dummies, decoys which possess similarity to the real object are relevant alternatives. We select as relevant those alternatives which have commonality with the actual object, which possess relevant respects of similarly- similarity of features and properties to it. In this sense, a *bonsai* cannot be a relevant alternative of a big red wood tree, while a stripped mule can be a relevant alternative of a Zebra. However, we do not know if Goldman will agree to that analysis but his anti-luck stance brushes shoulder with this sense of relevant alternative.

Now, let us come back to Goldman's explanation of his example. He discusses several theories to assess it and discounts each of them.

(1) The example with a relevant counter-evidence poses a problem, according to Goldman, for the traditional analysis of knowledge.

(2) His own old causal analysis (expounded in "A Causal Theory of Knowing") fails too. Henry's belief that the object is a barn is caused by the presence of the barn, the causal process is a standard perceptual one which has the tendency to produce beliefs that are true rather than false, still we hesitate to call it knowledge. The reason is associated with the comparative reliability of process. The same belief forming process – perception – is used in both the real and hypothetical worlds. But the visual processes in the later category are less reliable than those in the former. In the later, Henry fails to discriminate visually.

(3) Peter Unger's 'non-accidentality' analysis is also not satisfactory because the notion of 'non-accidentality' itself needs explanation.

(4) Lastly, 'indefeasibility approach', Goldman admits, is competent enough to handle such problems. But 'defeasibility', he holds, in an unrestricted form, is too strong. On such an account of 'defeasibility' (viz. S's justification that p must not be defeated by true statements), it will always be possible to find a true proposition that defeats S's justification. Hence, S will never (or seldom) know.

Now how does the facsimile bear on the present case? Its presence makes the possibility- that the object Henry saw is a facsimile – a real possibility. Knowledge requires the elimination, not of all possible alternatives. The possibility of knowledge

depends, to a large measure, on the elimination of relevant ones.[40] The 'qualifier' relevant is important for Goldman who considers two answers to the question: Which alternatives are relevant alternatives? What makes an alternative a relevant one? This issue is directly pertinent to the dispute between the skeptic and their opponents. Since the skeptic challenges the claims to knowledge, the relevant alternative will be an "unusual alternative hypothesis" which the putative knower is unable to preclude. Descartes' evil demon who is doing everything in its power to get S believe p as false, is a hypothesis which one is unable to preclude. It will not do for the opponents of skepticism to respond that the skeptical hypothesis is an idle one. A person can know despite the presence of 'idle' alternates which cannot be precluded. Goldman perceives the problem to be one of specifying when an alternative is 'idle' and when it is 'relevant' or serious.

In trying to answer the above query, Goldman has stated two views. The first view is that the set of relevant alternatives in a putative knower's circumstances is mapped by rules implicit in the "semantic contents of 'know'". "Given a complete specification of Henry's situation, a unique set of relevant alternatives is determined: either a set to which the facsimile alternative belongs or one to which it doesn't belong". According to this view, the semantic content of 'know' contains (implicit) rules that map any putative knower's circumstances into a set of relevant alternatives. We should not say that the facsimile is a relevant possibility if there is none in his district or that a single facsimile once existed in a far away country, say, the Iceland, but none exists now.

The second view denies that the knower's circumstances uniquely determine a set of relevant alternatives. The verb 'know' does not semantically determine a set of

relevant alternatives in any putative knower's circumstances. "The putative knower's circumstances do not *mandate* a unique selection of alternatives, but psychological regularities govern which set of alternatives are in fact selected."[41] We may say that the two views differ in that while for the first the standards of relevance do *not* shift from context to context, on the second view, the standards of relevance *can* shift from context to context.

The second view has two variants. The first is to be found in Robert Stalnaker's article "Pragmatics"[42], and comes close to what is suggested by Fred Dretske in "Epistemic Operators,"[43] According to it, knowledge sentence of the form "S knows that p" implies a specification of the speaker's presuppositions concerning the relevant alternatives. This requirement appears to Goldman as too strong. And he is attracted to the second variant of the second view according to which a full specification of the relevant alternatives need not be stated. S may know p and discriminate the truth of p from relevant alternatives but this does not mean that he has a distinct set of alternatives in mind. But Goldman intends to remain non-committal regarding whether the semantic content of 'know' contains rules that map the putative knower's situation into a unique set of relevant alternatives or not, and whether there is a 'correct' set of relevant alternatives, and if so, what it is. He also avoids taking up issues of skepticism and remains neutral on that score. However, he admits that there are certain (psychological) regularities that pertain to the putative knower's circumstances determining the selection of relevant alternatives,, and seeks to defend his analysis of 'perceptually knows' in that light. In that task, he treats certain examples. Here he brings in the actual/counterfactual distinction he talked of at the beginning of his paper as part of the reliable process approach to knowing. He invokes counterfactual

situations, that is, actual/counterfactual distinction in accounting for knowledge attributions. His examples are as follows:

I. Suppose that Sam sees Judy on the street and correctly identified her as Judy. Judy and Trudy are identical twins, and so the possibility of a person's being Trudy rather than Judy is a relevant alternative, just as in the barn case an object's being a barn facsimile is a relevant alternative. Suppose further that Sam has a way of discriminating between them, such that when he meets Judy on the street he can make correct identification. So we say, he knows that it is Judy. Now if Sam does not have a way of discriminating between them, then his being right that it is Judy is just accidental. He does not *know* it is Judy.

To assess whether a person knows or not in such cases we have to determine the truth value of a counterfactual. In the 'Judy-Judy' (Judy is identified as Judy) case, the crucial counterfactual is, "If the person before Sam were Trudy Sam would believe her to be Judy'. And if the counterfactual is true, Sam does not know that it is Judy. If the counter example is false, then Sam may know it is Judy. This counterfactual theory involving a relevant alternative theory suggests the following analysis of (non-inferential) perceptual knowledge, according to Goldman.

S (non-inferentially) *perceptually knows* that p if and only if

(1) S (non-inferentially) perceptually believes that p.

(2) P is true, and

(3) There is no relevant contrary q of p such that, if q were true (rather than p), then S would (still) believe that p[44].

These conditions, incorporating the factor of contrary to fact relevant alternatives [condition (3)] show that the situation in which S would believe p is the situation in

which p is true. Goldman points out that essentially the same analysis of non-inferential knowledge is proposed by D. M. Armstrong in *Materialistic Theory of Mind*[45] barring the restriction to 'relevant' alternatives, and this analysis is refined and extended in *Belief, Truth and Knowledge*.[46]

However, Goldman says that the suggested analysis of perceptual knowledge is too restrictive in that it withholds knowledge attribution to deserving cases. To clarify his point Goldman considers a second example, Oscar sees Dak, the dachshund, and non-inferentially forms a belief in (P):

(P) The object over there is a dog.

Now suppose that (Q):

(Q) The object over there is a wolf.

(Q) is a relevant alternative to (P) because wolfs frequent that part of the field. There is the background information that Oscar has the tendency to mistake wolfs as dogs. Now, if the object Oscar saw were Wiley, the wolf, rather than Dak, the dachshund, Oscar would still believe that (p), namely, that the object over there is a dog. This means that Oscar fails to satisfy the proposed analysis with respect to (P), since (3) is violated. But does it mean Oscar does not know that (P) is true? It seems not, according to Goldman. The mere fact that he mistakes wolfs for dogs hardly shows that he does not know a dachshund to be a dog. Goldman is not willing to deny him knowledge. This is because the wolf-situation is not a relevant alternative. The Judy-Trudy situation and the dachshund-wolf situation are not on *par*. To disqualify a person from having perceptual knowledge, the contrary state of affairs that would produce the same belief in him must be a perceptual equivalent, a state that would produce a sufficiently similar experience. A 'perceptual equivalent' of an actual state

of affairs is an alternative which debars a true perceptual belief from being perceptual knowledge. Trudy is a perceptual equivalent of Judy, the makeshift barn is a perceptual equivalent of a real barn. The hypothetical wolf-state of affairs is not a perceptual equivalent of the dachshund-state of affairs. Unlike the Judy-Trudy situation the dachshund wolf- situation would produce in Oscar the same belief but not by means of the same appearance. The dachshund-world includes properties and features which are not too similar to the wolf-world to exhibit perceptual equivalence. Hence Goldman cannot deny knowledge to Oscar.

Goldman now comes with his definition of perceptual equivalence saying, "Perceptual equivalent of an actual state of affairs is a possible state of affairs that would produce the same or similar, perceptual experience."[47] Only those alternatives which are perceptually relevant can cause S to fail to know that p. Goldman's discussion of the notion of perceptual equivalence is complicated. And we shall stick to the main points of what he says without going into the whole length of dissecting his view. This notion is important for him because as he says, the definition of perceptual equivalence paves the way for an analysis of perceptual knowledge. Different factors come into play in the definitional analysis. A perceptual equivalent is an object with a set of properties, relativised to person and time, relation between the object and the perceiver plus conditions of the environment (distance, relative orientation, etc., a DOE relation). Since the definition of perceptual equivalence is a complex one, we propose to state as it has been by Goldman himself.[48]

If object b has the maximal set of properties J and is in DOE relation R to S at L, if S has some percept P at t that is perceptually caused by b's having J and being an R to S

at t, and if P non-inferentially causes S to believe (or sustains S in believing) of object b that it has property F, then

(c, K, R^*) is a perceptual equivalent of (b, J, R) for S at t relative to property F if and only if (1) if at t object c had K and were in R* to S, then this would perceptually cause S to have some percept P* at t,

(2) P* would cause S non-inferentially to believe (or sustain S in believing) of object c that it has F, and

(3) P* would not differ from P in any respect that is causally relevant to S's F-belief.

In the above analysis, Goldman employs the notion of 'perceptual causation'. The object of which a person perceptually believes a property to hold is the object he perceives. It is the object which perceptually causes the percept that elicits belief. The problem about *perceptual* causation, Goldman observes is that a person's percept may be caused by many objects, not all of which the person is said to perceive. The question then is which of the causes of the percept the persons is said to perceive? Again, it is not clear whether the set of properties J or K contains the property F. This is important because where F belongs to J, S's belief is true in the actual situation but where it does not so belong to K, S's belief is false in the counterfactual situation. Keeping these points in view Goldman offers a revised analysis of perceptual knowledge. And here too we state his formulation intact.[49]

At t S non-inferentially perceptually knows of object b that it has property F if and only if

(1) for some maximal set of non-relational properties J and some DOE relation R, object b has (all the members of) J at t and is in R to S at t,

(2) F belongs to J,

(3) (A) b's having J and being in relation R to S at t perceptually causes S at t to have some concept P.

(B) P non-inferentially causes S at t to believe (or sustains S in believing) of object b that it has property F, and

(C) there is no alternative state of affairs (c, K, R*) such that

(i) (c, K, R*) is a relevant perceptual equivalent of (b, J, R) for S at t relative to the property F, and

(ii) F does not belong to K.

We may recall that in concluding his "A Casual Theory of Knowing," Goldman tells us that he is not interested in giving the meaning of "S knows p", but only its truth conditions.[50] In the above analysis, conditions 1 and 2 jointly entail the truth condition for knowledge that S knows b to have F (at t) only if b does have F (at t). Condition 3B contains the belief condition for knowledge, restricted to perceptual knowledge. The most important condition is condition 3C which requires the elimination of the relevant alternative which is perceptually equivalent to the actual state of affairs.

How does this analysis bear upon the barn case where there are barn facsimiles in Henry's district? Let S=Henry, b=the barn Henry actually sees, and F=the property of being a barn. Conditions 1 to 3B are met if J stands for the set of all non-relational properties actually possessed by the barn at t, R for the actual DOE relation in which the barn stands to Henry at t and P for the actual visual percept caused by the barn. Condition 3C, however, is violated. There exists an alternative state of affairs (c, K, R*) where C=is a suitable barn facsimile, K=a suitable set of properties (except the properties of being a barn) and R*=almost the same DOE relation as the actual one. Thus, Henry does not know because he fails to discriminate.

In the dachshund-wolf case, S=Oscar, b=Dak, the dachshund, and F= being a dog, the first several conditions are again met. What about fulfilling the condition 3C? Is it met as well? Here, there is a relevant alternative state of affairs in which Willy the wolf is believed by Oscar to be a dog, but lacks the property of being a dog. So 3C is not violated because the hypothetical wolf-situation is not a perceptual equivalence of the actual state of affairs relative to being a dog. The relevant alternative does not deny knowledge to Oscar.

Now what is Goldman's recipe for eliminating the relevant alternative that is a perceptual equivalent? One view about elimination is Dretske's.[51] According to this view, S can eliminate a relevant alternative q only if his evidence for believing not-q is strong enough to allow her to know that not-q. One may also adopt the view that S can eliminate q if her evidence for thinking, that not-q is either strong enough to allow her to know that not-q or strong enough to allow her to have very good reason to believe that not-q. Also, a proponent of relevant alternative may adopt the view that S can eliminate a relevant alternative q by meeting one of the following three conditions: (1) her evidence for not-q is strong enough to allow her to know that not-q, (2) her evidence for not-q is strong enough to allow her to have very good reason to believe that not-q, or (3) S's belief that not-q is epistemically non-evidentially rational, where this is "a way in which it can be rational (or reasonable) [for S] to believe [that not-q] without possessing evidence for the belief."[52]

Goldman will not settle the issue in any of these ways. [He will fall back on perception]. Recognising a causal condition as necessary he takes his task to be that of bringing out how a reliable perceptual mechanism embodies resources for picking out the perceived object in the actual world from among the causes of the relevantly

alternative sensory experience. Such cases of perceptual discrimination also indicate that such cases override the counterfactual component by spelling out the incompatibilities in the apparent shape, size and colour of the object seen.

In this discrimination business the 'environment' relation plays a vital role in the actual pattern of human visual belief formation. These features were developed in ways which are important for Goldman's own epistemological thinking and for epistemology in general. We shall take them up in a separate chapter.

Notes & References

1. "A Causal Theory of Knowing", *The Journal of Philosophy*, Vol. XIV, No.12, 1967, pp. 357-37

2. *Ibid.* p.357.

3. *Ibid.* p. 358.

4. *Ibid.*

5. Pranab Kumar Sen, unpublished paper on "A Note on Current Researches in Knowledge and Justificiation."

6. "A Causal Theory of Knowing", *op. cit.*, p.369.

7. H. P. Grice, "The Causal Theory of Perception," *Aristotelian Society,* Suppl. Vol.35, 1961. D.M. Armstrong, in his *Belief, Truth and Knowledge,* Cambridge University Press, 1973, has referred to an unsophisticated version of the Causal Theory of Ramsey's note on "Knowledge" in "Last Papers", *The Foundation of Mathematics.*

8. "A Causal Theory of Knowing," *op. cit.*, p. 359.

9. *Ibid.*, p. 360.

10. *Ibid.*, p. 361.

11. *Ibid.*, [Emphasis ours].

12. *Ibid.*

13. *Ibid.*, p. 362.

14. *Ibid.*

15. *Ibid.*, p. 363. Footnote 8.

16. *Ibid.*

17. *Ibid.*, p.362.

18. *Ibid.*, p. 368.

19. Keith Lehrer's example occurs in "Knowledge, Truth and Evidence", *Analysis*, 25, pp.168-175.

20. "A Causal Theory of Knowing", *op. cit.*, p. 369

21. Jonathan Dancy, *Introducton to Contemporary Epistemology*, Oxford: Blackwell, 1992, p. 34.

22. "A Causal Theory of Knowing", *op. cit.*, p. 369

23. Peter D. Klein, "Knowledge, Causality and Defeasibility", *The Journal of Philosophy*, Vol. 73, No. 20, 1976, pp. 792-812. The objection occurs on p. 795.

24. "A Causal, Theory of Knowing", *op. cit.*, p. 364.

25. This is represented also by Figure 3 on p. 365 of Goldman's paper.

26. *Ibid.*, p. 371-372.

27. *Ibid.*, p.361.

28. *Ibid.*, p.372.

29. Peter D. Klein, "Knowledge, Causality and Defeasibility", *op. cit.*, p. 794.

30 *Ibid.*, p. 795.

31. *Ibid.*, p.796

32. *Ibid.*, p.797-798.

33. *Ibid.*

34. Gilbert Harman, "Selection from *Thought*", *Essays on Knowledge and justification*, G. Pappas and M. Swain, eds., Cornell University Press, 1978, pp. 206-12.

35. *Ibid.*, p.210.

36. "Discrimination and Perceptual Knowledge," *The Journal of Philosophy*, 73, 1976, pp. 771-791. Reprinted in *Essays on Knowledge and Justification*, Pappas and Swain, eds., Ithaca: Cornell University Press, 1978, pp.120-145.

37. *Ibid.*, p. 771.

38. *Ibid.*

39. *Ibid.*, 772.

40. *Ibid.*, 775.

41. *Ibid.*, 776.

42. "Pragmatics", in Donald Davidson and Harman, eds., *Semantics of Natural Language*, Boston: Reidel, 1972.

43. Fred Dretske, "Epistemic Operators" in *The Journal of Philosophy*, LXVIII, 24, 1970, pp. 1007-1023, p. 1022.

44. "Discrimination and Perceptual Knowledge," *op. cit.*, 778 Emphasis author's.

45. *Ibid.*, p. 779.

46. *Ibid.*, n. p. 729.

47. *Ibid.*, p. 780.

48. *Ibid.*, 783.

49. *Ibid.*, 785-86.

50. "A Causal Theory of Knowing," *The Journal of Philosophy*, Vol. 64, No. 12, 1967, p. 372.

51. Fred Dretske, "The Pragmatic Demension of Knowledge", in Fred Dretske, *Perception, Knowledge and Belief: Selected Essays*, Cambridge: Cambridge University Press, 2000, p. 57.

52. Stewart Cohen, "How to be a Fallibilist?," *Philosophical Perspectives*, 2, 1988, p. 112.