KNOWLEDGE AND CAUSALITY: A CRITICAL ANALYSIS

THESIS SUBMITTED FOR THE DEGREE OF PH.D IN PHILOSOPHY AT THE UNIVERSITY OF NORTH BENGAL 2007

BY

SUKUMAR CHANDRA ROY

Under the Supervision of

Dr. Manjulika Ghosh

DEPARTMENT OF PHILOSOPHY
UNIVERSITY OF NORTH BENGAL
RAJA RAMMOHUNPUR : DARJEELING
W.B

ACKNOWLEDGEMENTS

I owe a deep sense of gratitude to my supervisor, Dr. Manjulika Ghosh, Retd. Professor of Philosophy, University of North Bengal, for everything she has done for me in the way of inspiring, helping and providing invaluable guidance, and also in improving my style and expression. But for her I could not have completed this project.

To the teachers of the Department of Philosophy, University of North Bengal, I remain grateful to their encouragement and help.

I remain thankful to Professor. Sandhya Basu, Department of Philosophy, Rabindra Bharati University, for supplying me with xerox copies of books and journals.

I am thankful to the Librarian and Staff of the Central Library of the University of North Bengal for their active cooperation.

I thank Dr. Banani Adhikary(Das), SIT, Siliguri for helping with computer operations.

I thank Sri Dipankar Kundu of M/s Dipti Communication and Computer Centre, Shantipur for composing, printing out, photocopying and binding the thesis in a presentable manner.

Finally, I express my gratitude to my loved ones, who have always been the source of my strength and comfort.

Sukumar Chandra Roy
12.11.2007
(Sukumar Chandra Roy)

University of North Bengal

Contents

Chapter I

Introduction

Knowledge and Causality

Causality has been a pivotal concept in the history of philosophy since the times of the ancient Greeks. Besides science and philosophy of science in contemporary philosophical thinking, concept of causality has been instrumental in formulating the relationship between the psychological and the neuro-physical aspects of human behaviour. It has had an important role to play in philosophy of mind also. What is of moment for us in the context of the present work is that a category of theories in the philosophical discipline of epistemology has been christened as casual theory of knowing exploiting the notion of causality for solving problems of knowledge. Prior to any statement about the relation of causality to knowledge, which is our present concern, the nature of causality is intended to be clarified. We shall, therefore, first try to understand the nature of causality before proceeding to discuss its applicability to certain problems of knowledge as proposed by some epistemologists.

I

It is the business of the various sciences to discover particular causal relationship and causal laws; but it is part of the business of philosophy to determine what causal relationship in general are. What it is for one thing to cause another or what it is for nature to obey causal laws? This is indeed an ontological question, a question about how the world goes on. In Hume's phrase, the central problem is that of causation 'in the objects'. In approaching the ontological question philosophers are engaged in the meaning, the logic of causal statements and the uses of causal language or conceptual

analysis .There is also an epistemological dimension to this basically ontological enterprise. The epistemological question is: How can we learn about causal relationships, test, refute, establish, confirm causal claims and hypotheses? There are various theories here, the verificationist, the phenomenalist, or subjective idealist, etc. The ontological and epistemological questions are interrelated in that the possibility of finding things out may set limit to what we have any right to assert to be there. Again, on the other way, an ontological claim that lacked epistemological support would be nothing but an empty speculation. Causality is thus, taken in philosophy in a very broad sense. It covers functional dependence as well as connections between cause-events and effect-events; there may be continuous processes, which it would be not at all natural to describe in the ordinary terminology of cause and effect. There may be statistical laws, probabilistic laws working in contrast to strict causal, that is, deterministic laws. Causal relation is also described as the relation between ground and consequent. There may be human actions which do not fit into some preferred framework of mechanical causation. There may be room for teleological explanation of what goes on. Philosophers have paid attention to one, or some, or most of them according to their predilection.

Causality is used throughout the sciences and in daily life for inference and for explanation. We represent the world causally so that we can make predictions, diagnose faults, make strategic discussions, explain events and apportion praise or blame. Like all other types of explanation, casual explanation is a correlation of given phenomena, how actions and events stand in relation to one another. To understand the nature of causality, therefore, two questions need to be answered: (I) what are the characteristics of causal relation? And (II) what are the properties of causal entities?

These two questions are but relatively independent. There cannot be any crisp division between them, as the characteristics of the entities and those of relations flow into one another. For example, the essential characteristics of mind and body as *res cogitans* and *res extensa* respectively *a la* Descartes, makes possible not an one-directional causal relation from either the mind or the body, but one of interaction, although the theory of causal interaction was replaced by the theory of parallelism by Spinoza, and this theory is implied by the very nature of consciousness and extension as independent attributes.

There are different types of process or order in the world – casual, purposive, etc. An example of the casual relationship, occurring by sheer chance, would be the relation between alighting of a bird on a tree and the dropping of a fruit from the tree. In Sanskrit terminology it is expressed as *Kakataliya*. It is absolutely irregular, just a matter of accident, a matter of pure chance. Instances of causal order would be "heat melts ice", "water quenches thirst", "bodies gravitate towards one another", etc., or to take Hume's example of billiard balls, one billiard ball strikes another and the second ball moves. The above instances of causal relation exhibit three characteristics. They are non-anthropomorphic, uniform and deterministic. Let us discuss them below.

Causal relationship is a certain order of events and not an activity of an agent undertaken to serve some purpose. This is true in spite of the fact that all our knowledge about the earth and the fullness thereof arises from causal interaction, not only among earthly bodies but of earthly bodies with our bodies. In the objects of the world, causality or rather causation is seen as a relation between concrete events. But more precisely, it is it is a relation between 'instantiated features'. We do not have one concept for physical causation and another for human actions and reactions. Cause is a

fairly unitary concept. However, an expansive view of causality accommodating human purpose, etc., may not be accepted in all quarters. A person, may, of course, be instrumental for bringing about the particular order of events in a particular situation through his activities, e.g., switching on the gas oven and putting a kettle of water on it, bringing the water to the state of boiling. Yet, with regard to the causal relation, we cannot speak of approving or disapproving purposes, ends, wishes or desires. Causal relation simply disregards them.

Causality refers primarily to the uniformly constant features of the given phenomena. One aspect of the uniformity of nature is the causal uniformity – the same cause giving rise to the same effect. The uniformities of causal relations deal with specific processes under certain limited conditions. In our daily experience or in the early stage of science, the uniformities are of a general character, one thing causing another, fire causing burning. But in advanced sciences, the uniformities may be stated numerically with precision.

The third characteristic is that causality is associated with the concept of determinism or necessity. The concept of necessity has been violently criticized by philosophers from Hume to Russell. After Hume, many have questioned whether there is (or can be) any metaphysical meaning of causality or valid inference based on it. We do not perceive any real effect of one thing upon another, that is, no causality in the classical sense. What we term 'causality' can be nothing other than mere constant conjunction of the idea of the cause with that of the effect. Without minimizing the likelihood of this criticism we may content ourselves to hold that necessity is not a myth; it has a meaning, otherwise such objections against it would have been of no consequence. Even Hume does not reject all forms of necessity. He says that

'necessity' belongs to the causal discourse, to the relation between cause and effect. The relation between cause and effect is characterized by two factors; uniformity and regularity; and in terms of these two factors Hume defines the concept of necessity. Hume equates causation as it really exists in the objects with regular succession. It is a general feature of the way the word works. It is as he says, 'the cement of the universe'. Such regularity is well fitted to play the role of necessity, that is, of something that would license causal inference, but not *a priori*, not from the knowledge of individual cause or effect on its own. "...the necessary consciousness merely a perception of the mind..."[1] "The mind feels the necessity."[2]

Causal relation is deterministic in the sense that something more than the sequence of events is asserted. Here, the assumption is that a given result is due to or is determined by the existence of some other fact. Some have understood the regularities of succession as probabilistic or statistical rather than deterministic.[3]

Hume's treatment of causality leads on to Kant. Kant's concept of causality is an answer to Hume's criticism. According to him, experience of events requires not only awareness of their intrinsic features but also that they be regarded as one after another, in an invariable regularity determined by the concept of causality. E.g., in order to experience the flowering of the chrysanthemum as an event, I must not only perceive the blossoms as they now appear but must also regard them as merely the present consequence of a succession of prior organic developments. Thus, Kant responded to Hume's skepticism by maintaining that the concept of causality is one of the conditions we determine for ourselves prior to all experiences. Causality as a pure concept of understanding is applicable *a priori* to every possible experience. We might naturally ask whether every event has a cause. Does the cause obtain in the world

itself? To these further questions Kant's answer is that it is vital to distinguish between the realms of phenomena and noumena. Phenomena are the appearances which constitute our experience; noumena are the things in themselves which constitute reality. All our synthetic *a priori* judgments of causality apply only to the phenomenal realm, not to the noumenal. What Kant claims to have shown is that the concept of cause and the principle drawn from it, for example, that everything that happens "presupposes something upon which it follows according to a certain rule" stands *a priori* before all experience and has its undoubted objective rightness though admittedly only in respect to experience.[4]

Let us now consider the nature of causal entities. In a literal sense causal entities are perceptual entities. Causality begins with perceptual experience and attempts to make it intelligible. The events or processes in the world offer problems. How does wood float? Why does iron sink in water? How do the heavenly bodies move? All causal entities can be located within the space and dated in time. Causality, in the most general way, is a type of explanation which employs only functional correlation among entities in the space-time continuum. The causal entities –the cause and the effect—are events, for events are needed to bring about other events. According to Davidson it is events that are the most plausible candidates for 'causes' and 'caused' alike.[5] States alone cannot cause change. For example, the states, like the dryness of the ground, the density of the trees, the wind's being strong, may all be causally relevant for the explanation of a forest fire. But these states might persist for ever and the forest fire may never occur without an event to trigger it off, for example, someone's lighting a match or throwing a lighted cigarette into the dry bush. But it is also required that the states be included alongside events. The lighted match or

cigarette's being dropped into the bush would never have caused the forest fire, had not the ground been so dry, the wind so strong, the foliage so dense. The states, combined with the events are the causally efficacious entities to produce effect events. The ontology of causality is thus a two-tiered ontology of states and events.[6]

As regards the question whether causal entities are facts no easy answers are forthcoming. J.L.Mackie, while considering the nature of the entities that are thought to stand in causal relationship, distinguishes two types of causes, (1) producing causes which are related to events and (2) explanatory causes which are related to facts. Mackie will thus, accommodate both events and facts into causal relationship.[7] There is another strong view. We shall see that Alvin Goldman has very emphatically asserted that causal relationship holds among facts only.[8] Another philosopher, Steven Luper-Roy assumes that matters involving causes and effects can be dealt with in terms of facts, so that there is no need to introduce the ontological category of events.[9] However, to regard the causal chain as a series of events each link of which causes its successor and is caused by its predecessor is pretty strong.

Having recourse to grammar, we find that events or states may be referred to by singular terms such as names, definite descriptions or demonstratives. When we express them in sentential structures or propositional constructions, we introduce "fact," as far example, "the fact that the lighted cigarette butt was thrown into the dry bush *(p)* caused...", or, "the fact that the lighted match was dropped in the dry bush (*p*) caused ." The fact is counterfactually relevant for the occurrence of some effect. We ask ourselves the question, "Would the effect still have occurred if *p* (the lighted match...' etc.) had not been true?" Or, "Would the effect have been as likely to occur if *p* ('the lighted match ...'etc.) had not been true?" What we observe from the above

discussion is that our causal claims are heterogeneous. Sometimes, it is a claim of being in a certain state, or a claim about a particular occurrence or, event or an accounting of the fact that such and such which is counterfactually relevant in the production of the effect. In whatever way it might be interpreted our causal claims are causal explanations in which two events are linked by the verb 'to cause'.

Apart from the ontology of causation, there is the employment of causality in epistemology. Causality is not only explanatory; the explanation is the cementing of the *explanans* and the *explanandum*, so that no chance factors can intrude. It is necessary for knowledge that what is known causes the knowledge – the true belief, that is to be styled as knowledge. Ordinarily, we argue that someone could not have known this or that, by showing that he or his sense organs could not have been termini of any causal chain emanating from the thing allegedly known. According to G. Vlastos, Plato himself held this view.[10]

Our question naturally becomes: "What contribution does causality make towards having knowledge?" or "Why do we need such a notion for our analysis of knowledge?" The most common answer that is being given by the causalists in epistemology is that it is to prevent arriving at knowledge in an accidental or lucky way. Now, the 'chance' factor may be relevant in the sense that paradigm cases of true belief may fail to count as knowledge. Suppose that I believe something and am correct in my belief, but my true belief may not qualify as knowledge. My belief may merely happen to be true. The possibility that our beliefs can be true 'by chance' leaves us unsatisfied with an account of knowledge as mere true belief. What is needed is to define knowledge in the following way:

a) S believes that p.

b) P is true and,

c) the conjunction of (a) and (b) is not a matter of chance.

But how do we test that 'chance' has been eliminated? Such a characterization of knowledge, hence, automatically requires justification to be the criterion to ward off true beliefs held by chance. Yet, that may not be the end of the trouble. Though, one has a true belief that is justified, it is nevertheless plausible, at least *prima facie* plausible, that one has ended up having a true belief as a matter of chance. So justified true belief cases are not really different from ordinary cases of believing truly. If so, then what is needed is yet another condition that wards off true beliefs which are 'chancy' in this new way. That additional condition is said to be the causal factor in one's belief-forming practices. This is how some epistemologists have introduced causality in theory of knowledge, rather, in how the traditional analysis of knowledge is to be carried out. In what follows we shall discuss the traditional or classical theory of knowledge, and how a reorientation of epistemology has been suggested in causal terms, in the light of the issues raised by Edmund L.Gettier.[11] This will concern us in the next section.

II

A lion's share of epistemology in contemporary philosophy investigates what is perhaps epistemology's main question: "What is knowledge?" Epistemologists today have taken closer look at this question. Not only that; most of what has been written in epistemology over the ages may be said to be a quest for an answer to the question: "What is knowledge?" For example, in the *Theaetetus*, Plato considers the thesis that knowledge is true opinion that can be backed up with adequate evidence or explanation, thus, providing an answer to the question above. It can also be argued that

some answer or other to the question was presupposed in the epistemological writings of the philosophers of the 17th and 18th century Europe.

There are different aspects of this question like "What is the *concept* of knowledge?" or "What is the definition of knowledge?" or "What are the truth-conditions of a statement of the form S knows that p, where S is some subject and p stands for some sentence expressing a state of affairs. Of these different formulations, the formulation of the question in terms of the truth conditions, i.e., necessary and sufficient conditions of the truth of a statement of the form S knows that p is as follows:

S knows that p if and only if

(i) P is true

(ii) S believes that p and

(iii) S is justified in believing that p.

This formulation, incorporating the necessary and sufficient conditions of knowledge – the true-condition, the belief-condition and the justification-condition – is also called the traditional or the classical account of knowledge because it is alleged to be traditionally accepted by philosophers. Here the idea is that the conditions (i), (ii) and (iii) are individually necessary and jointly sufficient for the truth of S knows that p. Versions of this account of knowledge have been advanced by A. J. Ayer[12] and R. M. Chisholm[13] and is strongly suggested in Moore's *Some Main Problems of Philosophy.*[14] These versions, although different in important aspects, agree in formulating the question "What is knowledge?" in terms of stating the necessary and sufficient conditions of knowledge. According to Ayer, "S knows that p" iff,

1. P is true

2. S is sure that p is true, and

3. S has the right to be sure that p is true.

Chisholm's analysis goes thus:

"S knows that h is true" means

(i) S accepts h

(ii) h is true,

(iii) S has adequate evidence for h.

This justified-true-belief analysis of knowledge has been criticized by Edmund Gettier in his article, "Is Justified True Belief Knowledge?" In this article, which is regarded as a turning point in the history of epistemology, Gettier puts forward two counterexamples[15] to show that the traditional account of knowledge, the account of the truth-conditions of knowledge-ascribing statements given above, is insufficient. These examples show, according to him, that it may be true of a person S, a sentence p that p is true, S is justified in believing that p is true and yet it is not the case that S knows that p. Let us state the two counter-examples.

Case I: Suppose that Smith and Jones have applied for a certain job. And suppose that Smith has strong evidence for the following conjunctive proposition:

(d) Jones is the man who will get the job and Jones has ten coins in his pocket.

Smith's evidence for (d) might be that the President of the Company told him that Jones in the end would be selected, and that he, Smith, had counted the coins in Jones' pocket ten minutes ago. Proposition (d) entails:

(e) The man who will get the job has ten coins in his pocket.

Let us suppose that Smith sees the entailment from (d) to (e) and accepts (e) on the ground of (d), for which he has strong evidence. In this case, Smith is clearly justified in believing that (e) is true.

But then imagine further that unknown to Smith, Smith himself and not Jones, gets the job. And also, unknown to Smith, he himself has ten coins in his pocket. Proposition (e) is then true, although (d) from which Smith inferred (e) is false.

In this example, then, all the following are true, though the proposition (d) from which Smith inferred (e) is false, (i) (e) is true, (ii) Smith believes that (e) is true, and (iii) Smith is justified in believing that (e) is true. But it is equally true, says Gettier, that Smith does not know that (e) is true, for (e) is true by virtue of the number of coins in Smith's pocket, and Smith bases his belief in (e) on a count of the coins in Jones' pocket, whom he falsely believes to be the man who will get the job.

It is to be noticed that no skeptical problem is involved here, since everything that has been said, however, is compatible with the idea that if Jones *had* got the job, we would have granted Smith that he *knew* that Jones would get the job.

Case II: Suppose Smith has strong evidence for the following proposition:

(f) Jones owns a Ford.

Smith's evidence might be that Jones has at all times in the past within Smith's memory owned a car, and always a Ford, and that Jones has offered Smith a ride while driving a Ford. Let us imagine now that Smith has another friend Brown, of whose where- about he is totally ignorant. Smith selects three place-names quite at random, and constructs the following disjunctive propositions:

(g) Either Jones owns a Ford, or Brown is in Boston.

(h) Either Jones owns a Ford, or Brown is in Barcelona.

(i) Either Jones owns a Ford, or Brown is in Brest-Litovsk.

Either of these propositions is entailed by (f), since any proposition entails the disjunction of itself and any other proposition ('p' entails p or q). Imagine that Smith realized that each of the disjunctions he has constructed are entailed by (f), and proceeds to accept (g), (h) and (i) on the basis of (f). Smith has correctly inferred (g), (h) and (i) on the basis of (f), and he is therefore, justified in believing each of these three propositions. But, of course, he has no idea where Brown is.

Imagine now that Jones does *not* own a Ford, but is driving a rented one, and secondly, that Brown is, by pure coincidence, in Barcelona. We have now a situation in which (h) is true; Smith believes that (h) is true, and is justified in believing (h). But still Smith does not know that (h) is true. Gettier's conclusion is that justified true belief is not adequate for knowledge.

Let us take note of some features of Gettier's critique of the traditional or JTB analysis of knowledge. Gettier's analysis purporting to demolish the traditional account does not consist in saying that the three conditions, characterized as the truth-condition, belief-condition and justification-condition are not necessary; it consists in showing that they are not sufficient. "The purpose of the counter-examples is to show that even if all the conditions are fulfilled, by a person and a proposition the person might *not* have knowledge with respect to that proposition; it is *not* to show that we could have knowledge even if some of these conditions were not fulfilled."[16]

The question whether the conditions are necessary may be raised and in fact, has been actually argued out by some philosophers. We may be allowed some digression to discuss this issue at this stage.

Thus, against the truth-condition, it can be said that this is a condition which can be laid down only for propositional knowledge, but not all knowledge is propositional. The non-judgemental awareness of children, knowing someone or something through acquaintance or knowing in the sense of having an experience cannot be expressed in propositions.

We now consider the conception of knowledge as entailing a belief. Such a condition has not played a central role in the history of philosophy. Let us consider several key figures in the historical tradition. For Descartes,[17] that which is known is that which is clearly and distinctly perceived. Locke[18] holds that knowledge "is the perception of connection and agreement, or disagreement and repugnancy of any of our ideas." For Berkeley,[19] knowledge seems to be a relation between a knowing mind and an idea that is known. That is, it appears that knowledge is for him the perceiving of an idea. And Hume[20] says that knowledge is "the assurance arising from the comparison of ideas".

What is interesting is that all these historical figures are concerned with knowledge understood as a species of perceptual or intuitive awareness and not a species of belief.

Some philosophers, notably John Cook Wilson[21] and H.A. Prichard[22] have argued not only that knowledge was not historically construed as a species of belief, but rather that it is a mistake to construe it as such. The main argument is that knowledge is *sui generis*, indefinable and therefore, not to be understood in terms of some other thing which is not itself knowledge.

It is also maintained against the justification condition that we cannot demand justification for every belief or every knowledge-claim on pain of infinite regress.

Again, let us consider the following kind of case. In D.H. Lawrence's short story "The Rocking-Horse Winner", a young boy could accurately predict which horse will win by riding his rocking-horse. This, of course, is an unlikely scenario. But it is at least *imaginable*. We might come to say of him, "We have no idea how he does it, but somehow or other he does know which horse will win the race." This will be an example of knowledge without justification, since the only reason the boy had of being confident that his next prediction will be correct is his past run of successes. But a past run of successes gives one a good reason for being confident that he will be successful in future provided that he has reason to think that the past run would not give out on him. And the rocking-horse winner has no such reason. If this line of argument is correct, we have to dilute the justification condition.

We shall not, however, stop to consider these views in any detail, and shall come back to the features of Gettier's counterexamples. The most natural way of looking at the critique of Gettier and his followers is that each of the three conditions may be necessary for knowledge but they are not jointly sufficient. Another feature of Gettier's critique is that it depends upon some presuppositions:

> First ... it is possible for a person to be justified in believing a proposition that is in fact false. Secondly, for any proposition p, if S is justified in believing p, and p entails q, and S deduces q from p and accepts q as a result of this deduction, then S is justified in believing q.[23]

There is a third unacknowledged presupposition involved, namely, that even if a proposition is false, it can justify our belief in another, at least in those cases in which the first proposition entails the second.

It has been observed that Gettier's critique, the very force of his counterexamples, depends upon these presuppositions. If anything is wrong with these presuppositions, Gettiier's counterexamples would cease to exist.

Since Gettier's construction of his two counter-examples, very little has been written in epistemology which does not respond in some manner or other to the problem, they raise for the so-called classical account of knowledge. Various attempts have been made to amend, refine or improve upon the account to solve the problem, which has now come to be called "the Gettier Problem".

The solutions proceed along different lines. We shall here content ourselves with mentioning the different attempts to salvage the traditional account of knowledge from Gettier's objections. Although aware of the nature of the problem Gettier raised and the various attempts at solving it, we shall desist from elaborating upon them, we intend also not to consider the questions whether and to what extent the problems can be solved, whether the solutions are acceptable or whether the problems themselves are genuine. We wish, rather, to pursue our main concern in course of this work–the relation between knowledge and causality as a specific response to Gettier's counterexamples. Before we embark upon this task, we shall take a quick look at the reactions against Gettier's critique.

Some of these consist in showing that one or more of Gettier's presuppositions are wrong. Robert Almeder[24] has questioned the first presupposition. He is criticized by William Hoffman,[25] and Almeder defends his position in his *Philosophia* article.[26]The second presupposition, which is called the principle of deducibility for justification (PDJ), has been rejected by Fred Dretske.[27] Irving Thalberg[28] has criticized the PDJ *via* the counter-examples. He has challenged the genuineness of

Gettier's counter-examples to undermine the principle itself. And in this task he is in good company with C.G.New.[29] However, Michael K. Hooker[30] points out flaws in Thalberg's arguments against Gettier. The third presupposition has been called into question by R. G. Meyers and K. Stern[31]. Michael Clark[32] not only attacks the unacknowledged third presupposition but also attempts to remedy the defect in the traditional account of knowledge by adding one more condition to the three already listed. Turk Saunders and Narayan Champawat[33] are, however, critical of this solution. Likewise, both R.M.Chisholm[34] and Keith Lehrer,[35] two leading philosophers of the West, have responded to the problem over the last three decades by offering a fourth condition formulated differently by them within the framework of their respective theories of justification.

One important message of the Gettier counterexamples is that for genuine knowledge and not just fortunately true belief, luck ought to be ruled out and there ought to be an appropriate connection between the fact that p and the believer's belief that p. Such a solution is put forward by Alvin Goldman in his article "A Causal Theory of Knowing".[36] To understand the force of Goldman's views we need to see that in all the contrary examples produced to show that knowledge is not JTB, if we look at them with care, we find, in all of them, not only produced by Gettier but also those which cropped up in the course of the literature that what makes the subject believe that p, and what makes the belief true fall apart. And this introduces the element of chance in the knowing process. This becomes clear if we look at Gettier's clarifications of his counter-examples. He says:

> But it is equally clear that Smith does not know that (e), i.e., (The man who will get the job has ten coins in his pocket") is true, for (e) is true in virtue of the number of coins in Smith's pocket, while Smith does not know how many coins are in Smith's pocket, and bases his belief in (e) on a count of the coins in Jones' pocket whom he falsely believes to be the man who will get the job[37].

The reason why the counter-examples arise is the following:

"What causes Smith's belief is not that in virtue of which Smith's belief is true; they fall apart, so, if we want to exclude Gettier's counter-example[s] we shall have to prevent these two from falling apart".[38]

The chance factor has been taken note of in a slightly different way by Sibajiban Bhattacharyya.[39] He says that the traditional definition of knowledge "is a conjunction of several sentences which are, of course, intended to be logically independent of one another. That '*p* is true' is one of them shows that it cannot be deduced from the rest. Its addition to them looks very much like an ad hoc measure only to ensure the truth of *p* if known"[40]. This is so because the problem of knowledge has been posed in terms of finding out, what factor, if any, is necessary and sufficient to turn a *true* belief into a state of knowledge. Bhattacharyya elaborates on this saying that "'*X* believes truly that p' is analysed into the conjunction '*X* believes that *p* and *p* is a true proposition.' That is, in believing truly that *p*, *X* does no more than simply believe that *p*, the rest is left to chance, a factor beyond his control."[41] Bhattacharyya says further that even when we have supplemented other sentences to determine the nature of the belief the position is

no better. We can do no more than holding a justified belief which happens to be true. "Whether *p* is a true proposition or not is a matter of chance; so when I hold a justified belief that *p*, it is an accident which turns out my believing into knowing that p".[42]

Bhattacharyya refers to Gettier's own gloss on his counter-examples. "In the first example, he says 'But imagine, further, that *unknown to Smith*, he himself, not Jones will get the job. And, also, *unknown to Smith*, he himself has ten coins in his pocket.' In the second example, he says 'And by the *sheerest coincidence, and entirely unknown to Smith*, the place mentioned in proposition (h) happens really to be the place where Brown is'".[43]

The account of knowledge, due to Alvin Goldman, seeks to prevent what causes Smith's belief and what makes it true from falling apart. This he achieves by acknowledging a causal connection between them, and thus, also proposes to eliminate the chance factor in our analysis of knowing. The pioneering effort of Goldman is followed by important defenses from other causal theorists. The consideration of Goldman's causal theory of knowing and allied causal theories will occupy us in the chapters to follow.

Before we conclude we intend to cite one very relevant comment on the chance factor vitiating knowledge. "Writers on Gettier normally do not say what they think is wrong with chance, but Aristotle does when he says, 'To leave the greatest and noblest of things to chance would hardly be right.' Aristotle is here referring to *eudaimonia* or happiness, but his point is a general one about goods, at least great goods, and knowledge is surely a great good. It is incompatible with the value of knowledge that the aim of the knower, namely, getting the truth, occurs by chance."[44]

Notes and References

1. David Hume, *A Treatise of Human Nature,* ed., P.S.Ardal, London Fontana /Collins, 1972, p.148.

2. *Ibid.*, p.147.

3. J.L. Mackie, *The Cement of the Universe – A Study of Causation*, Oxford, 1980(paperback edition), Preface, p.IX.

4. Immanuel Kant, *Prolegomena* (1785), tr., by P.G. Lucas, Manchester University Press, 1953, Section 36, p.80. Also *Critique of Pure Reason*, (1780 & 1787) tr. by N. Kemp Smith as *Immanuel Kant's Critique of Pure Reason*, London: Macmillan, 1929, A 202, B 234/247.

5. D. Davidson, "Causal Relations", *The Journal of Philosophy*, LXIV, 21, pp.691-703.

6. Helen Steward, "Causality Philosophically Speaking", *Aristotelian Society*, 1997, p.1-28.

7. J.L. Mackie, The *Cement of the Universe – A Study of Causation*, *op.cit.*, Introduction, p.12.

8. Alvin I. Goldman, "What Is Justified Belief?", *Justification and Knowledge*, G. S. Pappas, ed., D. Reidel Publishing Co., 1979, pp.1-23.

9. Steven Luper-Roy, "The Reliability Theory of Rational Belief", *Monist*, 68, 1985, pp. 203-225

10. G.Vlastos, "Reasons and Causes in the *Phaedo*", *Philosophical Review*, LXXVIII 3, 1969, pp.291-325.

11. E.L. Gettier, "Is Justified True Belief Knowledge?" , *Analysis*, 23, 1963. Reprinted in *Knowledge and Belief*, ed., A.P. Griffiths, Oxford: Oxford University Press, 1969, pp.144-146.

12. A.J. Ayer, *The Problems of Knowledge*, Penguin Books, 1956.

13. R.M. Chisholm, *Perceiving: A Philosophical Study*, Cornell University Pres, 1968.

14. G.E. Moore, *Some Main Problems of Philosophy*, New York: Collier Books, 1953.

15. *Op.cit.*, pp.145-146.

16. P.K. Sen, Unpublished article "A Note on Current Researches on Knowledge and Justification", p.4. Emphasis is authors',

17. Réné Descartes, *Meditations on First Philosophy* in *Philosophical Works of Descartes*, Vol. I, trans. by E.S. Haldane and G.R.T.Ross, New York: Dover, 1955, p.158.

18. John Locke, *An Essay Concerning Human Understanding*, ed., Peter H. Nidditch, Oxford: Clarendon Press, 1974.

19. George Berkeley, *A Treatise Concerning the Principles of Human Knowledge*, Part-1, Secs: 1 and 2 in *Philosophical Works*, ed. M.R. Ayers, London: J.M. Dent & Sons, 1975.

20. David Hume, *A Treatise of Human Nature*, Book 1, part ii, Sec.I; Peter H.Nidditch Version of the L.A. Selby-Bigge edition, Oxford: Clarendon Press, 1974, p.124.

21. John Cookwilson, *Statement and Inference*, Oxford: Clarendon Press, 1926, Part-1, Chapters 2 and 3, part – II, chapters 1to 3.

22. H.A. Prichard, *Knowledge and Perception*, Oxford: Clarendon Press, 1950.

23. E.L. Gettier, "Is Justified True Belief Knowledge", *op.cit.*, pp.60-65.

24. Robert F. Almeder, "Truth and Evidence", *Philosophical Quarterly*, 24, 1974, pp.365-368. In this paper, Almeder gives two arguments to prove his point. But in a later paper "On being Justified in Believing False Propositions", *Philosophia*, 1985, he gives three arguments in support of his position.

25. William E. Hoffman, "Almeder on Truth and evidence," T*he Philosophical Quarterly*, 25, 1975, pp.59-61.

26. Robert F. Almeder, "On Being Justified in Believing False Propositions", *Philosophia*, 1985, p.276.

27. Fred I. Dretske, "Reason and Consequences", *Analysis*, 28, 1968, pp.166-168.

28. Irving Thalberg, "In Defense of Justified True Belief", *Journal of Philosophy*, 66, 1969, pp.795-803.

29. C. G. New, "Some Implications of 'Someone'", *Analysis*, 26, 1986, pp. 62-64.

30. M .K. Hooker, "In Defense of a Principle of Deducibility of Justification", *Philosophical Studies*, 24, 1973, pp.402-404.

31. Robert G Meyers and Kenneth Stern, "Knowledge without Paradox", *Journal of Philosophy*, 70, 1973, pp.147-160.

32. Michael Clark, "Knowledge and Grounds: A Comment on Mr. Gettier's Paper", *Analysis* 24, 1964, pp.24-48.

33.J.T. Saunders and Narayan Champawat, "Mr. Clark's Definition of Knowledge", *Analysis* 25, 1964, pp.8-9.

34. R.M. Chisholm, *Theory of Knowledge*, 1st ed., Englewood Cliffs, New Jersey: Prentice–Hall, Inc., 1966, p.21; *Theory of Knowledge*, 3rd ed., New Delhi: Prentice-Hall of India, 1992, p.3; *The Foundations of Knowing*, Minneapolis: University of Minnesota Press, 1982, p.47.; "On the Nature of Empirical Evidence' in R.M.

Chisholm and R.J. Swartz,eds., *Empirical Knowledge: Readings from Contemporary Sources*, Englewood Cliffs: New Jersey, Prentice-Hall, Inc., 1973,240.

35. Keith Lehrer, "Knowledge, Truth and Evidence", *Analysis*, 25, 1965, p.170; K. Lehrer and T. Paxson, Jr., "Knowledge: Undefeated Justified True Belief". *Journal of Philosophy*, 56, 1969, p.227; *Knowledge*, London: Oxford University Press, 1974, "The Gettier Problem and the Analysis of Knowledge", 1980, "The Coherence Theory of Knowledge", 1986, "Meta Knowledge: Undefeated Justification:" 1988 and *Theory of Knowledge*, London: Routledge, 1990, p.11.

36. Arvin I. Goldman, "A Causal Theory of Knowing", *Journal of Philosophy*, 64, 1967, pp.355-72: Reprinted in *Essays on Knowledge and Justification*, Pappas and Swain, eds., Cornell University Press, 1978.

37. E.L. Gettier, "Is Justified True belief Knowledge?" *op.cit.*, p.145.

38. Sen, P.K, *op.cit.*.

39. Sibajiban Bhattacharyya, *Doubt, Belief and Knowledge*, ICPR, New Delhi in association with Allied Publishers, Calcutta, 1987, p.37.

40. *Ibid.*

41. *Ibid.*, p.39.

42. *Ibid.*

43. *Ibid.*, p.39. The quotation is from Gettier, *op.cit.*, pp.145-146. Emphasis is Bhattacharyya's.

44. Linda Zagzebsk, "What is Knowledge?" , in *The Blackwell Guide to Epistemology*, ed. John Greco and Earnest Sosa, Blackwell Publishers, 1999, p.100, The citation from Aristotle is in *Nichomechian Ethics* 1109B25.

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.

Chapter III

Marshall Swain and the Causal Account of Knowledge: Statement and Appraisal

I

The causal theory of knowledge is further developed by Marshall Swain.[1] Swain's theory is intended, in part, as an improvement on Goldman's early proposal in which a causal connection between states of affairs and beliefs is required for knowledge.[2] We may say that Marshall Swain's theory is a successor to Goldman's causal theory of knowing . Like Goldman, Swain too delimits his enquiry to empirical knowledge, but unlike his predecessor he clearly says that he confines it further to an analysis of the concept of primary non-basic knowledge – knowledge of specific events and states of affairs in the world, for example, "There is a table in front of me", "The house is on fire", "A football is larger than a marble", etc. That is to say, Swain wishes his analysis to cover all cases of empirical knowledge.

Like a number of contemporary epistemologists, Swain begins with Gettier's important paper, "Is Justified True Belief Knowledge?" and attempts to repair the definition. According to him, "One way of characterising the defect [pointed out by Gettier] is to say that even though the justification involved is sufficiently strong to render the proposition evident, the justification nevertheless is defeated by some special counter evidence." [3] Let us state the definition of non-basic knowledge as conceived by Swain.

(K) S has non-basic knowledge that p if and only if

(i) p is true;

(ii) S believes that p;

(iii) S's justification renders p evident for S and

(iv) there is no special counter evidence q such that q defeats justification.

Keeping in mind the area of primary non-basic knowledge, Swain attempts to clarify condition (iv) of definition (K) saying "I shall argue that with respect to primary non-basic knowledge defeasibility condition can be replaced by conditions that refer to facts about the *causal connections* that obtain between a man's evidential beliefs and the events or states of affairs about which he has knowledge."[4]

He constructs a counter-example of the Gettier-type. Suppose that S is looking into a field, and in the distance he sees an object that has the shape of a sheep. In addition to this visual experience he has olfactory and auditory stimulations of there being a sheep in the field. On the basis of this evidence he comes to believe truly that there is a sheep in the field, but in some far corner where S cannot see it. What S actually sees is a cement replica of the sheep. "Thus, *S* has a true belief that there is a sheep in the field and his justification renders this evident for him. Yet, S does not *know* that there is a sheep in the field, for his justification is defective. In the case at hand, there is some special counter-evidence *q* namely, 'S does not see a sheep, but rather a cement replica of one' such that *q* defeats the justification of *p*. Hence, condition (iv) of (K) is not satisfied—a desired result."[5] So he complains that the defeasibility analysis is not very illuminating.

The condition (iv) could be replaced by a causal condition which can be formulated as follows:

(iva) The causal chain leading to *S*'s belief in *e* contains the event or state of affairs referred to by *p*.

Here 'e' refers to that portion of S's total body of evidence (E) that is immediately relevant to the justification of p. In the particular example under consideration S's belief that e, he seems to see a sheep in the field, is caused by his seeing a cement replica of a sheep and not by the real sheep in the field. The fact that there is a sheep in the field plays no role in the causal chain leading to his belief that e. In any case, S does not know that there is a sheep in the field. "That there is some special defeating counterevidence can be *explained* in terms of the lack of a causal chain connecting *S*'s belief that e with the state of affairs referred to by *p*".[6] Thus, Swain starts with a full-fledged causal analysis of knowledge, and a little further on he suggests a condition amalgamating both defeasibility and causality or we can say that he suggests an interpretation of defeasibility of justification in terms of causality. Let us consider the case proposed by Swain (changing only the name of the protagonist):

> Suppose that Smith has wired up a detonator box to a charge of TNT to blast a hole on the mountain side. He has checked the wiring, the batteries and the TNT carefully; he sets the timer, moves to a safe distance and waits for the explosion that he knows will occur. Before the occurrence of the explosion, it seems clear that Smith can be said to know it will occur, and even when it will occur. However, the above conditions of knowledge, with condition (iva) replacing (iv), are not satisfied, because the event referred to by p (the future explosion) is not a member of the causal chain leading to Smith's evidential beliefs. It could hardly be so, since it has not occurred yet.[7]

The situation Swain exemplifies is a situation where one is said to know what is yet to occur. The yet unoccured event cannot surely be a member of the causal chain leading to one's evidential belief. To amend this incongruity, he accepts the suggestion of Goldman that the event and the evidential belief need not stand in a direct causal connection. It is enough that the beliefs and the state-of-affairs belong to an appropriate causal chain. Accordingly, Swain revises condition (iva) in the following way:

(ivb) The causal chain leading from *S*'s belief in *e* either

(1) contains the events and state of affairs referred to by *p*, or (2) contains some other event that is also a member of the causal chain leading to the occurrence of the event referred to by *p*.[8]

Referring to the replacement of (iva) by (ivb) Swain says: "... [It] will allow us to say that *S* knows that the explosion will occur in this example. The resulting conditions are similar in some respects to the causal theory of knowledge put forward by Alvin Goldman".[9] The two basic causal chains, distinguished by Goldman, that enter into the causal situation are claimed by Swain to correspond to parts (1) and (2) of condition (vb).

Now, this revised condition incorporating a clear *causal connection* between a chain of events that caused Smith to have his evidential beliefs and the occurrence of the explosion, is also not free from defects. In fact Brown Skyrms[10] has raised an objection against analyses that involve clauses formulated in the manner of (ivb). Here is his counterexample. Suppose while walking down the street, I find a man lying in the gutter, his head severed from his body. On the basis of this I come to believe that the man is in fact dead. Moreover, from the belief which is evident I can be said to

believe that the man is dead. But there may not be any causal connection between the fact which makes my belief true and the belief itself or my reasons for having the belief. It may be imagined that the man died actually by heart attack and fell into a gutter. After that a demented man came along and severed his head. The man was found in that condition by me. So, the force of this counterexample is that "condition (ivb) above is not satisfied because there is no event in the causal chain leading to your belief that his head has been severed from his body".[11]

Swain's understanding of this example, however, is different. He points out that severing the man's head from his body, though not the actual cause, is causally sufficient for his death. He does this by pointing to a counterfactual situation – a situation which is often invoked in understanding causation. He explains that "had this unfortunate man not died of a heart attack and had his head been severed from his body *anyway*, then he would (still) be dead."[12] In order to allow for knowledge in situations of this sort Swain revises the causal condition. Over and above the three usual conditions of knowledge that p, he adds the revised fourth condition replacing (ivb) in the following manner:

> (ivc) The causal chain leading to *S*'s belief that *e* either (1) contains the event or state of affairs referred to by *p*, or (2) contains some other event or state of affairs that is causally sufficient for the occurrence of the event referred to by *p*.

Swain, however, observes that (ivc) is not able to forestall cases which bear the structure of Skyrms' example. So far our empirical knowledge is concerned, in many cases, it is dependent upon the presence or lack of a causal connection between events that the knower has experienced, and through which he had gained certain crucial evidential beliefs, and the events which he is said to have knowledge. These cases are

cases in which the causal connections are straightforward. But causal connections are sometimes very peculiar and unusual. To handle such cases, the conditions thus far provided will not suffice. And this leads Swain to consider some possible and actual counter examples. One is a variation on the first of his examples.

> Suppose that S is looking into a field as before, and sees an object that he takes to be a sheep. And, as before, he hears bleating noises and is aware of sheep-like odors in the air. This time, he is not seeing a cement replica of a ship, but rather a very cleverly engineered television image of a sheep. ... Moreover, the sheep whose image is being projected is off in some far corner of the field, where S cannot see it. We may suppose that S's evidential beliefs, etc., are in this case just as they were in the previous example. Of course, in this case, as in the previous example, S does not know that there is a sheep in the field.[13]

Swain uses another example which is a variation of his second example stated above. Smith (this proper name has been inserted by us) is about to blast a hole in the mountainside. He has checked the wiring, TNT, and other things carefully. However, this time, one of the wires connected to the TNT becomes severed. When the timer sets off the detonator, the explosion does occur. But it is because of a felicitous stroke of luck. The battery was strong enough to form the arc jumping the severed ends of the wire. Here is an unusual causal chain. Smith might have reasoned that the battery was powerful enough and TNT will explode. But he did not reason in that way, and his

justification is still sufficiently good to render it evident for him that the TNT would explode. Even so from the point of view of knowledge his justification is defective.[14]

These examples show us that the causal chain is vitiated by some true counter-evidence. We need some guarantee that the causal chain is unproblematic; we need to guarantee that the causal chains involved are roughly what one would expect them to be if one's evident is to provide one with knowledge. In each case, whether in the original or the reconstructed examples instituted by Swain the causal chains contain events such that the occurrence of that event is a source of special defeating counterevidence. "Moreover, this special counterevidence consists of certain statements that are true because of events in the unusual causal chains that have resulted in S's evidential beliefs".[15]

In each case, there is a true recalcitrant piece of evidence, a televised image of the sheep in the first example and the broken connection between the TNT and the detonator of which Smith is unaware in the second example. To guarantee that the causal chains are not peculiar is to screen out any events or series of events the occurrence of which is a source of special defeating counter example. In view of this Swain reformulates his fifth condition as follows:

(v) There is no true statement q such that q in conjunction with S's evidence E fails to render p evident for S and such that q is true because of events in the causal chains referred to in (ivd).

Swain's final set of conditions stands thus: S has primary non-basic knowledge that p if and only if

(i) p is true,

(ii) S believes that p,

(iii) S's justification for p renders p evident for S,

(ivd) The causal chain leading to S's belief in e (i.e., the evidential beliefs) either, (a) contains the events or state-of-affairs referred to by p, or (b) contains some other event or state-of-affairs, that is, in the context of the evidence possessed by S, either causally or logically sufficient for the occurrence of the state-of-affairs referred to by p,

and

(v) There is no true statement q such that q in conjunction with S's (total evidence) E, fails to render p evident for S, and such that q is true because of events in the causal chains referred to in (ivd). This fulfills the need to guarantee that the causal chains referred to in condition (ivd) is unproblematic.[16]

In the conditions of (v) above, Swain has dropped the vague term 'special defeating counter evidence' and states clearly that the causal chain should not contain any events such that their occurrence is a source of special defeating counter evidence.

In his remarks concluding the paper, Swain observes that his analysis will be applicable not only to relatively simple cases but also to cases where the causal connection and the epistemic relations involved would be more complicated. In situations where we have knowledge of events, which occurred either long ago or far away, the causal connections between those events and our crucial evidence e will be considerably complex. But this need not prevent us from having knowledge unless the causal chains involve defeating evidence. Whether our justification is going to be defeated by such events depends on the content and strength of our total evidential

belief. The strength of our evidence to render some proposition evident without being defeated is determined by the nature of the causal chain. So, we can say that

(1) the knowledge of specific events and states of affairs is a function of both causal and epistemic considerations,

(2) the causal complexity and evidential strength are functionally related.

Swain's analysis avoids the problem of correct reconstructions of the causal connection by eliminating the presence of any defeating counterevidence that is true in the causal chain. But his analysis is confined to primary non-basic knowledge, and hence, leaves open the question how are we to explain knowledge of universal generalizations and other propositions which do not fit the causal framework. However, the more difficult problems facing Swain's proposal, lie elsewhere. These problems are brought out clearly in Paxon and Tolliver's commentaries on Swain's paper. We propose to discuss these in the sections to follow.

II

In his causal analysis of knowledge, Swain combines the justified true belief approach and the causal connection as conditions of knowledge. Each is designed to correct the defect of the other. Thomas D. Paxon, Jr.[17] attacks the defeasibility clause, and shows the inadequacy of Swain's formulation of knowledge by referring to Swain's own example. Paxon regards Swain's strategy to be too strong. In his article, "Prof. Swain's Account of Knowledge" he raises initially the question "whether Swain's analysis is successful in employing the two sorts of analyses to correct the weaknesses of one another ..."[18] and then asks, "whether there are cases satisfying Prof. Swain's five conditions which we would not admit to be cases of primary non-basic knowledge".[19]

Paxon has stated all the five conditions of knowledge formulated by Swain. We are not going to state them over again to avoid repetition. Paxon also presents Swain's own example to show the inadequacy of his formulation of knowledge. The example referred to here is stated by Swain in this manner. We repeat it for our convenience - to understand Paxon's reading of it.

Suppose to blast a hole in the mountainside Smith has planted TNT in the appropriate place and has wired the TNT to a detonator box. The detonator has a timer on it. Smith sets the timer on the timer box for 30 minuets and the explosion occurs on schedule. The first three conditions are then fulfilled. Further, there is a clear causal connection between the chain of events that caused us to have our evidential belief, (that is, evidence for believing that the explosion will take place at time t^{30}), contains some event other than which is referred to by p (i.e., future explosion) which is causally sufficient for the explosion.

Paxon maintains that the explosion will occur everything remaining the same. He imagines the possibility that the two wires running to the TNT somehow break and adds that the two ends fall into a small pool of water or a piece of steel and the circuit is completed once again as a matter of chance. Thus, we can say that Smith does not know that the explosion will occur, this evidence is defeated by a true statement q (the wire is broken), even though conditions (iv) and (v) are satisfied. The q in conjunction with S's evidence E fails to render p evident for Smith. So, the conditions (iv) and (v) in Swain's analysis without a *ceteris paribus* clause (clause to the effect that everything remaining the same) would be too severe. This is particularly necessary for (iv) for our knowledge of future events. But such a *ceteris paribus* reading of (iv) raises difficulty for (v) since it requires the defeating statement to be true as a result of

state of affairs which may not turn out to be causally sufficient for p (the TNT will explode at ^{t30}) given the state of the universe.[20] Accordingly, Paxon seeks to substitute condition (v) by (ύ). The substituted condition is as follows:

(ύ) There is no true statement 'q' (defeating statement) such that 'q' in conjunction with S's evidence E fails to render 'p' evident for S and such that either 'q' is true because of events in the causal chains referred to in (iv) or because of events in the causal chain actually yielding p.[21]

What does such a substitution take care of? According to Paxon, we can now count the breaking of the wire as an element in the causal chain which led to the occurrence of p. But this reconstituted analysis is also too strong.

Swain has claimed that "the defeasibility conditions can be replaced by conditions that refer to facts about the *causal connection* that obtains between a man's evidential beliefs and the events or states of affairs about which he has knowledge".[22] Paxon develops his own counterexample to show that the defeating statement is true because of the causal chain leading to S's belief. The importation of the causal conditions into an essentially justified true belief analysis has failed to save it. "It often seems clear", says Paxon, "that it is often causally possible that there be some misleading counter-evidence that obtains because of the causal chains leading to S's belief in the evidence or those leading to the state of affairs to be known. If this is so, causal connections between the state of affairs designated by the defeating statement "*q*", and either S's belief in *e* or the state of affairs *p* no matter how carefully restricted, are not sufficient to guarantee the appropriate epistemic relation."[23]

Paxon concludes that Swain's analysis is too strong.

III

Joseph T. Tolliver[24] has taken note of Marshall Swain's analysis of the concept of primary, non-basic knowledge according to which knowledge is gained only if certain causal relations obtain between a person's evidential beliefs and the event or state of affairs known. He observes that Swain intends clause (v) in his definition of (K) to specify the conditions under which there might be 'special defeating counterevidence.' This functions as a defeasibility component in his analysis of knowledge.

What is unacceptable to Tolliver in Swain's contention is that although according to Swain we do not want the causal chains involved to generate defeating counterevidence, Swain also says that these causal chains are the only source of possible counterevidence. A defeating counterevidence might have no genetic relation with the reasons for believing something. It may be independently true. The condition (v) is too weak as it fails to exclude defeating counterevidence. And Tolliver decides to take issue with Swain's claim. He clarifies his position on the matter with the help of an example. And we quote from him:

> Suppose S is a hunter of some experience who comes across some tracks on the ground. He is very good at discriminating tracks, and realizes that he has seen tracks like these, and discovered an animal at the end of them, that animal has been a deer. Let all this past observational evidence be part of *S*'s background evidence *b*. In virtue of *b*, *S* correctly believes that (*h*) One hundred percent of times when *S* has observed tracks like these have been times when *S* subsequently found deer at the end of them.

On the basis of *b*, *h*, and his current observations, *S* believes that

(*e*) These tracks are deer tracks.

He follows the tack, s and they eventually disappear into a thicket behind which he hears some noise. On the basis of these observations and *e*, *S* concludes that

(*p*) The animal behind the thicket made these tracks and it is a deer.[25]

Tolliver says that this might not be the case. It might be possible that there are a strange group of animals which leave tracks same as deer tracks and ninety-five percent of these tracks are made by these animals. Here we have a case where p is true, S believes that p, and S's evidence renders p evident for S. The causal chain leading to S's belief is sufficient for the occurrence of these states of affairs referred to by 'p', and there is no true statement q such that q in conjunction with S's evidence fails to render p evident for S and such that q is true *because of events in the causal chains* referred to in (ivd) of Swain's definition of (K).

But S does not know that p, although S is clearly justified in believing p. The fact that in ninety-five percent cases the tracks which look like deer tracks are actually caused by these strange animals constitute defeating counterevidence to S's justification. But the counterevidence is not true because of events in the causal chains as is required by clause (v). The causal chain is not the only source of possible defeating counterevidence. Hence clause (v) is too weak.

IV

The examples discussed by Paxon and Tolliver reveal an important distinction. When a person has evidence which justifies a belief, there will almost always be some additional pieces of evidence, which the person does not possess. Sometimes fragments of such unpossessed evidence are such that if the person comes to have that

fragment as additional evidence, then his belief has no longer been justified. This defeat of justification by unpossessed evidence makes Swain[26] propose some revisions to his previous theory. He in course of his revisions introduces certain new concepts to clarify his ideas. For this he calls any fragment of unpossessed evidence which defeats justification *undermining counterevidence*. But an important distinction has to be drawn. Any undermining counterevidence is not defeating. There may be some undermining counterevidence which S does not possess. This evidence even though undermining need not defeat S's justification. This is shown by Paxon's example of a person who sees a sheep in the field. Some counterevidence is merely undermining or misleading while some other counterevidence is not only undermining but also defeating as is the case with Tolliver's example. The counterevidence, namely, that ninety five percent of the animal tracks which look like dear tracks are not made by deers, not only undermines justification but defeats it too. Swain's previous theory fails to take into account this important distinction. He admits that both these examples go against the conditions put forth in KCJ (*Knowledge, Causality and Justification*).[27]

To rectify the situation, Swain introduces still another distinction. With respect to a particular justification, a distinction is to be made between a defective and a non-defective causal chain. In his words:

> "Intuitively, a defective causal chain is one that provides undermining counterevidence, while a non-defective causal chain is one that does not provide such counterevidence. Hence, when I say that a causal chain is defective I mean that it is defective insofar as it plays a role in some epistemic situation; I do not mean that it is defective from the causal point of view.[28]

Generally, when a causal chain occurs there will be possible alternative causal chains with respect to some specific event or state of affairs in the causal chain. Not every alternative to a causal chain is a significant one with respect to a particular justified belief. (i) C (causal chain) is significant alternative to a causal chain, say, X→Y (X causally leads to Y) and (ii) if C had occurred instead of X→Y, then there would have been an event or state of affair U in C such that S would not be justified in believing that p if S were justified in believing that U occurred. Swain wishes to develop the idea that one way in which a causal chain can be defective, with respect to a justification, is that there be some alternative of this sort to that causal chain. Swain calls the alternatives of this sort *significant* alternative.

To elucidate the idea of a casual chain which is a significant alternative, Swain refers to Goldman's example. Henry is driving through the countryside where he comes across a barn. We say that Henry perceives a barn. Now suppose that, unknown to Henry, there are papier-mâché facsimiles. If Henry confronts one such copy-barn, he will have perceptual experiences similar to those when he sees a real barn. Hence, there are alternatives to the causal chain P→ Bse (S believes e). But are the alternatives significant? Does Henry know that there is a barn? Goldman avers that Henry does *not* know, and Swain's intuitions are on Goldman's side. But where there are many more barns than facsimiles, it is not objectively likely that one of the alternatives P →BSe should have occurred. If one is to pick at random from among relevantly similar cases, actual and possible, it is unlikely that one would pick a case in which the person in question was looking at a barn facsimile. The barn-case strongly suggests that the conditions explicated above are not necessary for significance of an

alternative causal chain. Swain thus offers only a partial explication of the norm of significance.

There is another unexplicated notion. It is the notion of a non-defective pseudo-over determinant. Towards the beginning of his paper Swain, in suggesting modification to his account of knowledge in KCJ, introduced the notion of non-defective pseudo-overdeterminant. He maintained that p is justified when there is some event or state of affairs H such that (i) there is a *non-defective* causal chain from H to BSe (S's believing that e) and (ii) H is non-defective pseudo-over determinant of P (the specific events or states of affairs referred to by p).

The question is: what is a pseudo-over determinant?

There are two kinds of causal over determination, according to Swain. In his words:

> In any case of over-determination, two or more events or status of affairs are related to a single effect in such a way that, *ceterus paribus*, if either of them alone had occurred, then the effect in question would still have occurred. When each of the over determining events is appropriately called a *cause* of the effect in question, we have *genuine* over determination. But, when one of the over determinants is *not* properly called a cause, then it is a *pseudo*-over detrerminant.[29]

In his KCJ, Swain has given two examples of pseudo-over determination; one is the severed head case originally suggested by Skyrms, and the other case is the marriage example, wherein two people go through a wedding ceremony though they were already married. The pseudo-over determinant, taken by itself is causally

sufficient, though not actually the cause in a certain situation. Generally, when one event X is a pseudo-over determinant of another event, Y, then there will be a non-actual causal chain from X to Y which is an alternative to the actual causal chain W →Y. This seems to mean that the genuine and the pseudo-over determinants may work together in some cases. In this sense, a potential causal chain, a pseudo-over-determinant and a significant causal alternative - all these seem to bear the same meaning.

Now, let us see what a defective pseudo-over determinant is. A pseudo-over determinant may be defective if its actual occurrence would have the actual causal chain defective with respect to S's justifiably believing that p on the basis of e.

To put it in the way Swain does:

(DPO) For any event or state of affairs X and Y, X is a defective pseudo-over determinant of Y with respect to S's justifiably believing that *p* on the basis of *e* iff:

If X →Y had occurred, then the causal chain X → Y would have been defective with respect to S's justifiably believing that *p* on the basis of *e*.

In the above, DPO means defective pseudo-over determinant and X→Y means non-actual causal chain.

Swain, after all these elaborate discussions on causal analysis, admits at a later paper: "I am now convinced that this approach to the problem of knowledge is the correct one"[30]. The context of this remark is analysis of knowledge purely in terms of defeasibility. The distinction between *prima facie* and absolute justification is dependent on a clear notion of *defeasibility*. We have already said that Swain never completely abandoned reference to the causal ancestries of the subject's reason states. But the 'causal account of knowledge' is not suggested as a competitor of the

'defeasibility' view; rather, it is suggested as a refinement of the 'defeasibility analysis.'

We may recall that both Goldman and Swain attempt to account for knowledge by reference to causal antecedents of the belief that p (Goldman) or the reasons one has for believing that p (Swain). And both of them utilize counterfactual considerations concerning the manner in which the subject's beliefs or reasons would have been affected by different causal antecedents.[31]

References and Notes:

1. Marshall Swain, "Knowledge, Causality and Justification", *The Journal of Philosophy*, 69, 1972. Reprinted in *Essays on Knowledge and Justification*, eds., George S. Pappas and Marshall Swain, Cornell University Press, Ithaca and London.

2. In Note[4] on p. 89 of his paper he says, "The approach that I shall take is similar in some respects to the proposal made by Alvin I. Goldman in "A Causal Theory of Knowing".

3. "Knowledge, Causality and Justification", *op. cit.*, p.89.

4. *Ibid.*, p.89. Emphasis is author's.

5. *Ibid.*, p. 90.

6. *Ibid.*, p. 91.

7. *Ibid.*

8. *Ibid.*, p. 92. A structurally similar counter-example is also proposed by Swain in "An Alternative Analysis of Knowing", *Synthese*, 24, 1973, pp. 429-30. For another instance of this type is K. Lehrer's, "A Fourth Condition of Knowledge: A Defense", *The Review of Metaphysics*, 26, 1970, pp.125-27.

9. Marshall Swain, "Knowledge, Causality and Justification", *op.cit.*,*Ibid.*

10. Brian Skyrms, "The Explication of 'X knows that p'", *The Journal of Philosophy* 64, 1967, p. 373-389.

11. Marshall Swain, "Knowledge, Causality and Justification *op. cit.*, p. 93.

12. *Ibid.*

13. *Ibid.*, p. 95

14. *Ibid.*, p. 96

15. *Ibid.*

16. *Ibid.*, p. 97.

17. Thomas D. Paxon, Jr., "Prof. Swain's Account of Knowledge", *Philosophical Studies*, 25, 1974, pp. 57-61.

18. *Ibid.*, p. 57.

19. *Ibid.*, p. 58.

20. *Ibid.*, p. 59

21. *Ibid.*, pp. 59-60.

22. Marshall Swain, "Knowledge, Causality and Justification", *op.cit.*, p. 293, Italics Swain's.

23. Thomas D, Paxon, "Prof. Swain's Account of Knowledge", *op. cit.*, p. 61.

24. Joseph T. Tolliver, "On Swain's Causal Analysis of Knowledge", in *Essays on Knowledge and Justification*, eds., G. S. Pappas and M. Swain, Ithaca: Cornell University Press, 1978, pp. 106-108.

25. *Ibid.*, pp. 106-7.

26. Marshall Swain, "Some Revisions of 'Knowledge, Causality and Justification'", in *Essays on Knowledge and Justification*, eds., G.S. Pappas and M. Swain, Ithaca: Cornell University Press, 1978, pp., 109-119.

27. Swain does not say in clear terms which one among the undermining counterevidences is the defeating one. From all he discusses on this point, it seems an undermining counterevidence is a defeating one when it is in fact true. A true counterevidence which when added to one's evidence that p makes p non-evident, is called defeating undermining counterevidence. See, Sujata Chowdhury, *Nature of Knowledge*, Calcutta: Allied Publishers Ltd., 1996, p. 57.

28. Marshall Swain, "Some Revisions of 'Knowledge, Causality and Justification'", *op. cit.*, p. 110.

29. *Ibid.*, p. 117.

30. M. Swain, "Epistemic Defeasibility", *Essays on Knowledge and Justification*, *op.cit.*, p.161.

31. Introduction, *Essays on Knowledge and Justification*, *op. cit.*, p. 26.

Chapter IV

Goldman and Reliability Theory of Justified Belief

In his "What is Justified Belief?"[1] Goldman intends to give a theory of justified belief. In his earlier papers on knowing, viz., "A Causal Theory of Knowing", "Innate Knowledge" and "Discrimination and Perceptual Knowledge" Goldman denied that justification is necessary for knowledge. But in the present paper, he has second thoughts on the matter. He wants to preserve the relationship between knowledge and justification and says that "Justification is necessary for knowledge, and closely related to it".[2] However, despite this major difference between his earlier and later deliberations, we shall see that there are many points of contact between these two phases. This entitles us to say that the present development has its precursors in his earlier concerns with knowing.

In framing the criteria of an adequate theory of justification Goldman speaks of two constraints to place on a theory of justified belief:

(A) The theory must provide a set of substantive conditions, expressed in non-epistemic terms that specify when a belief is justified.

Goldman is not interested in defining the term 'justified' with reference to terms which are themselves epistemic, for example, terms such as 'warranted', 'has (good) grounds', 'has (reason) to believe' and so on. Like some normative ethical practices of defining ethical terms by a set of substantive conditions, e.g., defining 'right' in non-evaluative terms, such as *productive of the highest balance of good over evil*, he

"prefers a theory of justified belief to specify in non-epistemic terms when a belief is justified."[3]

(B) An adequate theory of justification must explain why beliefs that meet those conditions count as justified.

Goldman does not assume a position according to which "when a belief is justified there is something 'possessed' by the believer which can be called justification."[4] A theory of justified belief will specify the truth-conditions for the schema 'S's belief in *p* at *t* is justified,' and the theory of justification includes (a) one or more base clauses, (b) a set of recursive clauses and (c) a closure clause.

Before presenting his own theory, Goldman pauses to survey some other possible approaches to justified belief in a manner, which concentrates on the attempt to formulate one or more base-clause principle. The first candidate states it as follows:

(1) If *S* believes that *p* at *t* and *p* is indubitable for *S* (at *t*), then *S*'s belief in *p* at *t* is justified.

Here, '*p* is indubitable for *S*' means '*S* has no grounds for doubting *p*'. Since 'grounds' is an epistemic term, the above theory does not meet criterion (A). '*P* is indubitable for *S*' may also mean '*S* is psychologically incapable of doubting *p*'. But such an interpretation is vitiated by the counterexample of the religious fanatic who may be psychologically incapable of doubting the tenets of his faith but that does not make his belief in them justified.[5]

(2) If *S* believes *p* at *t* and *p* is self-evident, then *S*'s belief in *p* at *t* is justified.

In the above base-clause principle the crucial term is 'self-evident'. The expression may be interpreted differently. On one reading, 'self-evident' means '*p* is

directly justified' or '*p* is intuitively justified' or '*p* is non-derivatively justified. This, again, does not meet criterion (A), for 'justified' is an epistemic term. '*p* is self-evident' is also read as 'It is impossible to understand *p* without believing it'. On such an interpretation any belief in a trivial analytical truth or in a necessary truth will count as justified. Again, it's being *humanly* impossible to refrain from believing certain propositions that we understand is not enough to make those beliefs count as justified. Again, there are no prepositions such that (a) we understand them and (b) it is *logically* impossible not to believe them. If we accept (2), then there will be no justified contingent beliefs. "... other base-clause principles will be needed to explain the justificational status of beliefs in contingent propositions."[6]

Goldman rightly points out that a base-clause principle is naturally associated with the notion of 'direct' justification, and contingent propositions of first person-current-mental state variety often function in this way. Goldman, in this connection, refers to Chisholm's notion of a '*self-presenting*' state or proposition, e.g., "I am thinking". When a self-presenting proposition is true for a person S at time t, S is justified in believing it at t. On this analysis, for a proposition to be 'self-evident' for S at t suggests the following base-clause principle.

(3) If *p* is a self-presenting proposition, and *p* is true for *S* at *t*, and *S* believes *p* at *t*, then *S*'s belief in *p* at *t* is justified.[7]

Now, what does 'self-presenting' mean? On Chisholm's definition in the *Theory of Knowledge*, "*h* is 'self-presenting' for *S* at *t* if *h* is true at *t*, and necessarily if *h* is true at *t*, then *h* is evident for *S* at *t*".

This, again, does not meet criterion (A), for 'evident' is an epistemic term.

There may be another definition of self-presenting. 'Self-presentation' is an approximate synonym of 'self-intimation' and the definition of a self-intimating proposition has been construed by Goldman in the following way:

(SP) Proposition *p* is self-presenting if and only if necessarily, for any *S* and any *p* if *p* is true for *S* at *t*, then *S* believes *p* at *t*.[8]

The above definition of 'self-presenting' seems to be promising for a theory of justified belief because it is not an epistemic predicate. So (3) would be admissible as a base-clause principle. We are justified in believing the first person-current-mental state propositions because their truth guarantees their being believed.

Goldman, however, is not yet convinced of the correctness of principle (3) and decides to further rescrutinize the notion of 'self-presenting' more precisely. He observes that as the modal operator 'necessarily' can be read in different ways, so there are different forms of self-presentation and hence, different versions of principle (3). Goldman concentrates on two such forms – nomological and logical, (3_N) and (3_L) respectively. According to (3_N) self-presentation has to do with *nomological* necessity. It is nomologically necessary, let us say, that anyone in brain-state, B will *ipso facto* believe that he is in B. And such a belief is justified. The reliabilist position of Goldman would appear to dictate that any such belief is justified for the process producing it could not be more reliable: it is a causal law about the kind of brain-state that it always produces in its subject a belief that he or she is in a brain-state of that kind. But as Goldman himself goes on to say, the claim that any such belief is justified "... is clearly false. We can readily imagine circumstances in which a person goes into brain-state B and therefore has the belief in question, though this belief is by no means justified."[9]

We can think of counterexamples. We can imagine cases, in which that belief is not justified, e.g., a case in which we have reliable evidence (from the super ECG) to the contrary. Or, we can imagine that a brain-surgeon operating on *S* artificially induces brain-state B. From all this, Goldman observes, "We would hardly say, in such a case, that S's belief that he is in brain-state *B* is justified."[10]

According to the logical version of (3) – (3_L) self-presentation has to do with *logical* necessity. 'I am awake' is such that logically necessarily, for any S and any t, if 'I am awake' is true for S at t, then S believes that she is awake at t. But since we (perhaps often) believe that we are awake even when we are sleeping or dreaming, my belief that I am awake need not be justified simply because its truth logically guarantees that it is held. Goldman's objection is that the truth of a proposition logically guarantees that the belief is *held*, but the truth of the proposition does not guarantee that the belief is justified.

The above criticisms make Goldman to consider the matter afresh. The idea of self-presentation was introduced to ensure that truth guarantees justification. But there are cases of self-presenting beliefs without truth. So what is necessary or at least sufficient is that belief should guarantee truth. Such a notion is often labelled as 'infallibility or incorrigibility'. And this brings us to another formulation in terms of the incorrigibility of a proposition. A proposition p is incorrigible if and only if "necessarily for any *S* and any *t*, if *S* believes *p* at *t*, then *p* is true for *S* at *t*".[11] Basing on this definition of incorrigibility Goldman proposes principle (4).

(4) If *p* is an incorrigible proposition, and *S* believes *p* at *t*, then *S*'s belief in *p* at *t* is justified.[12]

As with self-presentation, there are two versions of incorrigibility corresponding to different interpretations of 'necessarily'. And from this, two versions of principle (4) can be constructed – nomological and logical, called (4_N) and (4_L) respectively.

According to (4_N) incorrigibility has to do with *nomological* necessity. It is nomologically necessary, let's say, that if anyone believes that he is in brain-state B, then he is in B. Thus, 'I am in brain-state B' is nomologically incorrigible. But we can think of a counterexample for (4_N) along the lines of refutation of (3_N). We can imagine cases in which the belief considered is not justified, e.g., in the case in which we have reliable evidence (from the super–EEG) to the contrary. Apart from the above counterexample Goldman considers another possibility for (4_N). It is that a person's mental structure might be such that the fact that S's believing that p guarantees the truth of p precisely at the time of belief. But does that imply that the belief is justified? Goldman discounts the intuitive possibility of such a supposition.

According to principle (4_L) incorrigibility has to do with logical necessity. Logical incorrigibility has a more honoured place in the history of conceptions of justification. Any true proposition of logic and mathematics is logically incorrigible. But not all such propositions are justified. Imagine, for example, that S comes to believe some complex logical truth on the basis of faulty mathematical reasoning or wishful thinking. But we may note that logical and mathematical truths are independent of any beliefs. Hence, the idea of beliefs logically guaranting truth is not applicable to them. The idea is restricted to contingent incorrigible propositions. But such restrictions are not immune to counterexamples as shown by Goldman's ingenious thought experiments with Humperdink and Elmer Fraud.[13]

Diagnosing the problems with the initial attempts Goldman notices that counterexamples arise, in each case above, because we can find a belief that meets the conditions (set by the theory of justification) but that is also *aberrantly* caused. To enumerate:

a. Belief is casually sustained by an inability to doubt the tenets of one's faith.

b. Belief is causally sustained by being blinded by the aura of the Presidency.

c. Belief is causally initiated by its being humanly impossible to refrain from believing a certain proposition.

d. Belief is causally initiated by the mere fact that the subject is in some brain-state.

e. Belief is causally initiated by wishful thinking.

f. Belief is causally initiated by reliance on a psedo-logical principle.

Such beliefs are fair game as counterexamples because none of the above theories places restrictions on how beliefs are caused, that is, on what causally initiates the belief or sustains it.[14] Each theory either fails to meet criterion (A) or criterion (B). Those that fail to meet criterion (B) do so because some causal requirement is needed in order to explain why beliefs count as justified. This brings us to Goldman's own theory of justified belief.

II

Goldman sets out to devise his theory of justified belief, dependent upon the reference to causes of beliefs. He says, "Thus, correct principles of justified belief must be principles that make causal requirements, where 'cause' is construed broadly to include sustainers as well as initiators of belief ..."[15] The need for causal requirements covers both base-clause principles and recursive principles. Conditions that fail to

require appropriate causes of a belief do not guarantee justifiedness. Granted that principles of justified belief must make reference to causes of beliefs, the question arises, what kinds of causes confer justifiedness. Goldman makes a distinction between faulty processes of belief-formation and the belief-forming processes which are justification-conferring. The former include confused reasoning, wishful thinking, reliance on emotional attachment, mere hunch or guesswork, and hasty generalization, among others. They share the common feature of *unreliability* and their belief outputs would be unjustified. The latter processes of belief-formation include standard perceptual processes, remembering, good reasoning and introspection. They have the common feature of *reliability*. A belief arrived at through a reliable means is generally true. Goldman states his positive proposal as follows:

> The justification status of a belief is a function of the reliability of the process or processes that cause it, where (as a first approximation) reliability consists in the tendency of a process to produce beliefs what are true rather than false.[16]

Goldman now clarifies and explains aspects of the initial statement. For him, certain beliefs are more justified than others, and accordingly certain belief-forming processes are more reliable than others. For example, some visual beliefs are justified and some are not. In fact, Goldman himself gives examples that demonstrate this. He says that a person's visual belief that he has seen a mountain goat may be more or less justified depending upon "whether he caught a brief glimpse of the creature at a great

distance, or whether he had a good look at the thing only 30 yards away".[17] So, all our visual beliefs are not equally justified as they are caused by visual processes which are not equally reliable. Seeing a distant object turns out to be a different process from seeing a nearby object.

Goldman intends to regard the justifiedness of a belief as categorical in the interest of simplicity and apparently believes that 'categorical' is the antonym of 'relative'. As to how reliable a belief-forming process must be in order that the beliefs be justified, Goldman finds that there is no precise answer to the question, and characterizes the justification-conferring processes as ones that have a 'tendency' or 'propensity' to produce beliefs that are true rather than false. However, he did not develop in detail an account of propensities that can easily be applied to belief-forming processes. He thinks that our ordinary concept of justifiedness is vague and leaves it thus.[18]

Goldman, however, proposes a complex type-token distinction regarding belief-forming processes in a brief passage of his paper, a distinction which has raised much debate among his critics. The distinction has been clarified in the following way by Richard Feldman. "A belief-forming process *token* is a specific, dated sequence of events that results in a belief. A belief-forming process *type* is a kind of belief-forming process token".[19] The belief-forming processes are types rather than tokens and Goldman recognizes "A critical problem ... concerning the degree of generality of the process types,"[20] so that it is the reliability of the process type responsible for a belief that determines its justification, the degree of generality will partly determine the degree of reliability. However, it may be observed that the specific process token that leads to any belief will always be an instance of many process types. For example, the

process token leading to my current belief that it is cloudy today is an instance of all the following types: the perceptual process, the visual process, processes that occur on Wednesday, processes that lead to true beliefs, etc. Of these, the reliability of the perceptual process may be important for the assessment of the belief but the reliability of the processes that occur on Wednesday or the processes that lead to true beliefs are not. If, however, the relevant type is characterized too narrowly then the relevant type for some or all process-tokens will have only one instance, (namely, the token itself). This point has been brought out by Goldman. When he says that "[a] process-type might be selected so narrowly that only one instance of it ever occurs, and hence the type is either completely reliable or completely unreliable."[21] This problem which is characterized as 'The Single Case Problem' is noted in his observation that "If such narrow process-types were selected, beliefs that are intuitively unjustified might be said to result from perfectly reliable processes; and beliefs that are intuitively justified might be said to result from perfectly unreliable processes".[22] A very broad account of the relevant types of belief-forming processes leads to what has been called the problem of 'generality'. Goldman seems to think that the reliability theory is to provide an account of relevant types broad enough to avoid the single case problem but not too broad to encounter the problem of generality.[23] It may be noted here that Goldman does not dwell on these problems in any greater length than what he says in a brief passage of his paper. However, this was taken up for consideration by philosophers who have written on the reliability theory of justification in general and Goldman's version of it in particular. We shall return to this at a later stage.

We have seen that the reliability theory appeals to the belief-forming processes that are reliable. The belief-forming processes must make reference to causes of

beliefs. We have already referred to Goldman's concern with the causal requirement when he says that the correct principles of justified belief must be principles that make causal requirements, their being involved in both the base-clause principles and recursive principles. He has also raised the question: What kinds of causes confer justifiedness? He now elaborates on that.

The causal ancestry of beliefs includes reasoning processes, desires, hopes or emotional states of various sorts, memory and perception, etc. The belief-forming processes concerned are restricted by Goldman "to cognitive events, i.e., events within the organism's nervous system."[24] But the belief-forming processes, which confer justifiedness, besides the 'cognitive' events, deals with the cognizer's environmental inputs, i.e., "with the goodness and badness of the operations that register and transform the stimulation that reaches him, ... A justified belief is, roughly speaking, one that results from cognitive operations that are, generally speaking good or successful. But '*cognitive*' operations are most plausibly construed as operations of the cognitive faculties, i.e., 'information processing' equipment *internal* to the organism."[25]

In the light of the above Goldman formulates the base-clause principle, he was concerned with, for justified belief. He states it as follows:

> (5) If *S*'s believing *p* at *t* results from a reliable cognitive belief-forming process (or set of processes), then *S*'s belief in *p* at *t* is justified.[26]

The above, says Goldman, is an admissible base-clause principle because 'reliable belief-forming process' has been defined in terms of such notions as belief, truth, statistical frequency like producing true beliefs 80% of the time, etc. and as such it is not an epistemic term. The above principle is only a provisional one because there are

difficulties if it is taken as providing the necessary as well as sufficient condition of justifiedness. Consider some processes which we take to be reliable, e.g., deductive inference. Imagine, however, that for one reason or another, we tend to infer from beliefs that are false. Given this, deductive inference would tend to generate *false beliefs* even though we are performing inferences just as we should. Thus, deductive inference would not count as reliable (since it would tend to produce false beliefs). This result strikes Goldman as inappropriate, for it seems that a process's reliability is a function of something about the process itself, rather than a function of something about the process's inputs (for example). This leads Goldman to revise his notion of reliability by introducing that of 'conditional reliability' in this way. "A process is conditionally reliable when a sufficient proportion of its out-put beliefs are true *given that its input-beliefs are true.*"[27]

At this point to understand the conditional reliability of a process Goldman introduces the distinction between two kinds of belief-producing process: belief-dependent and belief-independent processes. The belief-dependent processes are those *some* of whose inputs are belief-states. The belief-independent processes are processes *none* of whose inputs are belief states.[28] The former processes, such as inferring, are processes which take other beliefs as 'inputs' and yield new beliefs as outputs. The latter processes, such an introspection and perhaps, perception produce beliefs from states and events that are not beliefs. A belief-dependent process is *conditionally reliable* provided it generally produces true beliefs when its input-beliefs are true. A belief-independent process is *reliable* provided it generally produces true beliefs. Given these notions, Goldman reformulates his reliability theory this way:

(6A) If *S*'s belief in *p* at *t* results ('immediately') from a belief-independent process that is (unconditionally) reliable, then *S*'s belief in *p* at *t* is justified.

(6B)

If *S*'s belief in *p* at *t* results ('immediately') from a belief-independent process that is (at least) conditionally reliable, and if the beliefs (if any) on which this process operates in producing *S*'s belief in *p* at *t* are themselves justified, then *S*'s belief in *p* at *t* is justified.[29]

In note[10] of his paper Goldman refers to an objection that might have been made to his principles stated above and offers a reply. To quote him:

> It may be objected that principles (6A) and (6B) are jointly open to analogues of the lottery paradox. A series of processes composed of reliable but less-than-perfectly-reliable processes may be extremely unreliable. Yet applications of (6A) and (6B) would confer justifiedness on a belief that is caused by such a series. In reply to this objection, we might simply indicate that the theory is intended to capture our ordinary notion of justifiedness, and this ordinary notion has been formed without

> recognition of this kind of problem. The theory is not wrong as a theory of the ordinary (naïve) conception of justifiedness. On the other hand, if we want a theory to do more than capture the ordinary conception of justifiedness, it might be possible to strengthen the principles to avoid lottery-paradox analogues.[30]

Goldman adds a standard closure clause, to (6A) and (6B), to have a complete theory of justified belief, saying that beliefs can only be justified in accordance with (6A) and (6B), that is, if they have an ancestry of reliable and/or conditionally reliable cognitive operations. Although these two principles say nothing about the degrees of justification, we might say that the degree of justification of a belief corresponds to the degree of reliability of the process that produces it. Absolute or complete justification might then be characterized as justification to some suitably high degree, say for example, one beyond which justification in a given instance cannot be stretched.

Goldman, in keeping with the causal requirement of justifiedness of beliefs, calls the theory of justified belief of his as an Historical or Genetic theory and contrasts it with the 'Current Time-Slice' theories, borrowing the phrase from Robert Nozick. The 'Current Time-Slice' theories are instantiated by the Cartesian type Foundationalist theories which trace all justification status, at least of contingent propositions to the current mental states which are true of the cognizer at the time of having or entertaining the belief. He also puts the coherence theories under the same umbrella. In contrast to the Current Time-Slice theories, whether Foundationalist or Coherentist, the Historical/Genetic theory makes the justificational status of a belief

depend on the entire history of the process – both prior and final. Since the Historical theory emphasizes the reliability of the belief-generating processes, it is named Historical Reliabilism by Goldman.[31]

Goldman recognizes that he is not the first to discover the theory and finds the ancestors of the Historical/Genetic theory of knowledge or justification in Plato's theory of recollection; plausibly Locke and Hume had genetic theories of sorts in their accounts of origin of ideas; it might be argued that Hegel and Dewey had Genetic epistemologies; among contemporary writers W.V.O. Quine and Karl Popper have Historical epistemologies. We may also add to the list Putnam. Both Davidson and Putnam think that the object of a belief at least in a majority of cases is the cause of the belief.

Goldman notes that the theory articulated in (6A) and (6B) may be viewed as a kind of 'Foundationalism' because of its 'recursive structure,' but he is quick to distinguish his "Foundationalism' from the 'Cartesian' variety because the Historical theory makes no assumption that the justification status of a belief is something which the cognizer is able to know or determine at the time of belief. There are indeed many foundationalits who make the epistemic assumption of 'privileged access' as necessary.[32] Goldman's reliabilist foundationalism is different in that there are many facts about a cognizer to which he lacks privileged access. It is not to say that a cognizer is necessarily ignorant of the justificational status of his current beliefs at a given time; it is only to deny that he necessarily has and can get, knowledge or true belief about this status. This can be shown by a characteristic case of a cognizer who no longer remembers how or why he came to believe something; he may not be able to justify his belief if asked to do so, because the original evidence of the belief has long

been forgotten. Yet, we cannot say that the belief is not justified. "The belief is justified, though the cognizer can't demonstrate or establish that".[33]

It is clear that the Historical theory of justified belief as advocated by Goldman is related to the Causal theory of knowing presented in his other writings. We may go so far as to say that it is a blend of the causal and the reliabilist approaches found in them, even though he has refined his theory by introducing many new notions and sophistications. He says:

> The historical theory of justified belief I advocate is connected in spirit with the causal theory of knowing I have presented elsewhere[.[13]] I had this in mind when I remarked near the outset of the paper that my theory of justified belief makes justifiedness come closely related to knowledge. Justified belief, like pieces of knowledge, have appropriate histories; but they may fail to be knowledge either because they are false or because they founder on some other requirement for knowing of the kind discussed in the post-Gettier Knowledge-trade.[34]

Goldman distinguishes a variant of the Historical theory and calls it Transitional Phase-Reliabilism. It is a theory which envisages that from a set of beliefs some of which are unjustified one may arrive at a belief p through an impeccable reasoning procedure. We can say that the person concerned is justified in believing p. But Goldman avers that such a kind of justifiedness is not so closely related to knowing as the one stated above. For, it is not enough that the final phase of the process that leads to his belief in p be sound. It is also necessary that the entire history of the process be sound (i.e., reliable or conditionally reliable).[35]

Goldman now proceeds to consider two objections to his theory, namely, the Historical theory.

(1) The objection he considers here is this. It may be argued that there are some justified beliefs whose justifiedness is not derived from any causal ancestry, e.g., beliefs about one's current phenomenal states and intuitive beliefs about elementary logical and conceptual relations.

To this objection Goldman's reply is that our beliefs of our immediate experiences, such as of 'pain', which are said to be self-justified, have a causal history, however brief. Similarly, apprehensions of logical and conceptual relations are cognitive processes which are in time. When we speak of 'seeing' or 'intuiting' of logical truths, they may be very fast, but they too involve some mental operations that occupy time.

(2) The second objection focuses on the reliability aspect rather than the causal or historical aspect. Since the theory is intended to apply to all possible cases, the objection is that we can imagine a possible world *W* where the reliability of justifiedness of a belief does not hold. In that world, may be, wishful thinking is a reliable process; a benevolent demon so manipulates things that beliefs formed by wishful thinking usually come true. This would make wishful thinking in the possible world, the demon world, a reliable process. But according to the reliability theory no belief formed by wishful thinking is justified.Goldman's first response to this objection is not very satisfactory as it seems to swallow the objection. He says, "One possibility is to say that in the possible world imagined, beliefs that result from wishful thinking *are* justified. In other words, we reject the claim that wishful thinking could never, intuitively, confer justifiedness".[36] In note[15] to his text he says, "... in the world

imagined, even pure wishful thinking could confer justifiedness."[37] This response strikes us as surprising and not very sensible from Goldman's reliabilist position. He seems to retrace his steps by allowing that wishful thinking is a reliable process to confer justifiedness .[38]

However, there may be persons who feel that wishful thinking is not a reliable process. It is not epistemically rational to believe what is a result of wishful thinking, even in an imagined world. This objection has been sought to be encountered in two ways. First, it may be said that the proper criterion of justifiedness is not only the propensity of a process to generate true rather than false beliefs, but also to generate beliefs that are true *in a* non-manipulated world. The possible world, the demon world is not a 'natural' situation, but a 'manipulated' situation involving benevolent or malevolent demons. It is beliefs yielded by processes reliable in the absence of manipulative terms such as demons that are justified. Hence, the Historical theory can be suitably amended to include this condition.

Another way of encountering the objection is to suggest that a belief in possible world *W* is justified if and only if it results from a cognitive process that is reliable *in our world*. Let us explain if we are willing to grant that in our world some of the propositions S perceptually believes are epistemically rational because perception is a reliable cognitive process, then the same propositions would be epistemically rational for S to believe in *W* as well. But the same cannot be said of wishful thinking. For wishful thinking is not a justification-conferring process. So a belief formed in a possible world *W* by wishful thinking would not be deemed justified, even if wishful thinking is reliable in *W*. To put the matter in another way: a belief is justified in a

world *W* even if it is yielded by a process that is unreliable in *W* so long as that process is reliable in the *actual* world.

But that maneuver will not do perhaps if we consider the possibility that wishful thinking may turn out to be not irrational but reliable *in the actual* world. Indeed, its reliability may be a genuine possibility in the actual world if unbeknownst to us at present, there is a benevolent demon, who will arrange things in such a manner that our wishes come true. Goldman observes that such a future possibility of our wishful thinking rendering our beliefs justified goes against our intuitive judgments. According to him, such problems/counterexamples arise because we have adopted a standard schema of 'conceptual analysis'—in the present context, the analysis of "what is a justified belief?" What is really required is an explanatory theory of justifiedness of beliefs, why we do count or would count certain beliefs as justified and others as unjustified. Such an explanation must refer to our beliefs about reliability—what cognitive processes we believe to be reliable. The ones we believe to be reliable are then regarded as justification-conferring processes. So what counts with regard to the justifiedness of beliefs is what we *believe* as reliable. We believe wishful thinking as unreliable. Hence, we regard beliefs formed by wishful thinking as unjustified. What is important for us then is not what is actually the case or what is true about wishful thinking, but what we believe about it.

This emphasis on *what we believe* makes Goldman to consider a final objection and a final revision of his theory. The objection runs thus. It is possible that S has reason to believe that his belief is caused by an unreliable process although, in fact, its causal ancestry is fully reliable. Would not that make S's belief unjustified? That shows that the present reformulation of his theory by Goldman is mistaken. Let

us state the example of such an objection mentioned by Goldman himself in his own words:

> Suppose that Jones is told on fully reliable authority that a certain class of his memory beliefs is almost all mistaken. His parents fabricate a wholly false story that Jones suffered from amnesia when he was seven but later developed pseudo memories of that period. Though Jones listens to what his parents say and has excellent reasons to trust them, he persists in believing the ostensible memories from his seven-year-old past. Are these memory beliefs justified? Intuitively, they are not justified. But since these beliefs result from genuine memory and original perceptions, which are adequately reliable processes, our theory says that these beliefs are justified.[39]

Here, reliabilism suggests that Jones' memory beliefs are justified, even though he tends to think that they are not. How can reliabilism account for this case? Goldman, in his reply, reiterates his earlier stance that the actual reliability of a belief's ancestry is not enough for justifiedness; the cognizer must be *justified in believing* that the ancestry of his belief is reliable. And after several tries/and testing with several formulations specified under (7), (8) and (9) which are supposed to replace (6A) and which are not trouble and objection-free, he claims finally, "The justification status of a belief is not only a function of the cognitive processes that could and should be employed in producing it, it is also a function of the process that could and should be employed."[40] And from this line of thinking springs a fundamental change in his theory:

(10)

> If S's belief in p at t results from a reliable cognitive process, and there is no reliable or conditionally reliable process available to S which, had it been used by S in addition to the process actually used, would have resulted in S's not believing p at t, then S's belief in p at t is justified.[41]

This formulation reminds us of the defeasibility theory for justification of beliefs. The defeasibility condition says, among other things that a person's body of evidence should not contain any true propositions which will defeat the justification of belief. In the same way there should be no reliable process in addition to the one already in use if its addition will jeopardize S's believing p at t. The reliability theory is a refinement of the defeasibility view.

The question is: How does this component alluded to the reliability theory handle the proposed counterexample to the theory? Jones' beliefs result from a reliable cognitive process, namely, memory. Yet, in spite of what his parents tell him about his loss of memory when he was seven and development of pseudo-memory later, he continues to hold his memory beliefs. However, according to the above principle, his beliefs are not justified. For, in addition to memory, Jones has available to him *the testimony of his parents*, which, although misleading in this case, is generally reliable. His using this process - the one constituted by forming or adjusting beliefs on the basis of his

parent's testimony - would have resulted in his *not* holding his memory beliefs. Thus, Jones' memory beliefs are not justified.

We have given an exposition of Goldman's reliability theory as an account of justifiedness of beliefs. Towards the end of his paper he makes a distinction between *ex post* justifiedness and *ex ante* justifiedness. The *ex post* use occurs when there exists a belief, and we say of that belief that it is or is not justified. *Ex ante* use occurs when no such belief occurs and we say of a person independent of his doxastic state with regard to p that p is not suitable for him to believe. Goldman says that the bulk of his paper is about *ex post* justifiedness. For, in studying the connection between knowledge and justifiedness, what is crucial to whether a person *knows* a proposition is whether he has an actual *belief* in the proposition which is justified.

III

In this part of our exposition we shall attempt an assessment of Goldman's reliabilistic theory so far as justifiedness of beliefs is concerned. Generally speaking, the theory that a belief is justified if it results from a reliable process is vague about what might constitute this process. It seems that a feature of Goldman's reliability views is that they fail to spell out what might be thought to be their most important and distinguishing characteristic. Goldman, in trying to state the substantive conditions that specify when a belief is justified has gone through several modifications of his version of reliabilism. The vagueness of the theory is acknowledged by Goldman himself. He observes that no precise answer to the question as to how reliable a belief forming process must be in order that its resultant be justified, should be expected, and opines that "Our conception of justifiedness is vague in this respect."[42] He also says, "Since the purpose of my present theorizing is to capture our ordinary conception of

justifiedness, and since our ordinary conception is vague on this matter, it is appropriate to leave the theory vague in the same restpect."[43] Further on, while giving the final shape to his theory, he points out that "Our ordinary notion of justifiedness is vague, so it is appropriate for our analysans to disploy the same sort of vagueness."[44]

Moreover, in his paper, Goldman says that he wants to "specify when a belief is justified."[45] This seems to mean 'give necessary and sufficient conditions.' What he does, however, is to provide a putatively sufficient condition in the final formulation of his theory.[46] Reliability "consists in the tendency of a process to produce beliefs that are true rather than false" and "A process is conditionally reliable when a sufficient proportion of its output beliefs are true *given* that its input beliefs are true."[47]

The belief-forming processes concerned are restricted by Goldman "to *cognitive* events, i.e., events within the organism's nervous system."[48] They are types rather than tokens and Goldman recognizes "A critical problem concerning ... the degree of generality of the process type."[49] The problem of generality is the problem of choosing the relevant process type which is reliable for the assessment of a belief.

Richard Feldman has formulated the type-token distinction, saying "... for each belief-forming process token there is some 'relevant' type such that it is the reliability of that type which determines the justifiability of the belief produced by that token"[50] and gives the following formulation of the reliability theory:

(RT)

> *S*'s belief that *p* is justified if and only if the process leading to *S*'s belief that *p* is a process token whose relevant process type is reliable.[51]

An assessment of (RT), however, requires some account of what the relevant types of belief forming processes are. The problem with coming up with an account of relevant types is that relevant types may be characterized too narrowly leading to 'The Single Case Problem' or they may be given a very broad account leading to 'The No-Distinction Problem'. To provide an account of relevant types, the reliabilist must avoid both The Single Case Problem and The No-Distinction Problem. Finding such an account is called "The Problem of Generality." According to Feldman the seriousness of the problem of generality applies to a sophisticated version of the reliability theory proposed by Alvin Goldman. He complains that "Goldman does not say a great deal about what the relevant types of belief-forming processes are", [52] and is of little help in solving The Problem of Generally. It is true that in his examples of reliable processes he mentions standard perceptual processes, remembering, good reasoning and introspection. "It is not difficult to see," says Feldman, "... that the visual process is too broad a process and that Goldman's theory runs into The No-Distinction Problem."[53] and "The Problem of Generality is not solved."[54]

Goldman seems to respond to this difficulty by bracketing his standard processes of relevant types. His example of seeing a mountain-goat amply demonstrates that. Hasty scanning or catching a brief glimpse of the creature at a great distance is a process of a different relevant type from the one of leisurely scanning "having a good look at the creature only 30 yards away." The different relevant types are of different degrees of reliability and hence the beliefs resulting from them are not equally well justified. Thus, we can avoid the consequence of the standard view that beliefs produced by the same relevant type (visual processes, e.g.,) are equally well-justified.

But how do we, by what means, differentiate between relevant type processes? Feldman points out that this "... requires distinguishing processes in terms of factors external to the believer. Seeing a distant object turns out to be a different process from seeing a nearby object. This appears to be incompatible with Goldman's remark that the processes that he is concerned with are purely cognitive processes, operations that are 'internal to the organism.'"[55] It seems that the Problem of Generality can be solved but only at the cost of an important basic tenet of reliabilism.

The Problem of No-Distinction persists even when we have relativised the same relevant process type to different observation conditions. Thus, S's belief that p results from a process token of the same process type –Visual belief-forming process—under observation conditions O. The belief is justified if the visual process type is reliable in O. However, such a devise cannot save the situation. Whatever be the observation conditions, numerous beliefs can be formed in the same observation conditions. As such, these beliefs are either all justified or all unjustified. However, that cannot be the case. I may be justified in holding some of my beliefs and unjustified in holding some others. So the No-Distinction Problem persists even who have inducted the observation conditions and relativised the process types.[56] Feldman also shows that unless S's visual belief that p and beliefs of the same kind are produced many times in one set of observation conditions, there will be The Single Case Problem. For if a visual belief is an unusual one, never entertained before, or if a visual belief is formed in unique condition never to be repeated – then that belief will result from a process that leads only once to that kind of belief in those conditions. Consequently, the belief is justified if true and unjustified if false. The Single Case Problem remains.[57] In view of the above difficulties Feldman says:

> Thus, the relativised relativity theory does not provide an acceptable solution to the Problem of Generality. It is difficult to be entirely sure what implications the theory has, since we don't know what counts as the same observation conditions or the same kind of belief. However, to the extent that its implications can be determined, they seem to render the theory open to both The Single Case Problem and the No-Distinction Problem.[58]

Feldman further observes that Goldman's final formulation of his theory does not provide an adequate solution to The Problem of Generality. This can be shown with reference to the two different visual beliefs, one when I see a mountain-goat close at hand and one in which I only catch a glimpse of it at a distance. My belief that I see a mountain-goat is justified in the first case but not in the second. This result follows because in the second case there is available to me a reliable process that would have led me to withhold belief, but no available reliable process would have led to that result in the first case. Now what is that available reliable process which leads one to withdraw belief in the first case but either is not available or would not lead one to withdraw in the other? Feldman suggests that the only possible answer is a higher order cognitive process of reflection on the belief and the evidence for it, leading to the retention or rejection of the belief. Such reflection will reject the belief in case of the distant mountain-goat but not in the case of the nearby-mountain goat. Feldman concludes his observations saying "So Goldman's appeals to other available processes seem not to work in resolving the Generality problem".

Feldman makes another move. He tries to align reliabilism to foundationalism. According to this theory beliefs about one's current state of mind are results of belief-independent processes and from these beliefs one infers propositions about things external to one's current mental state. Foundational Reliabilism too does not avoid The Problem of Generality. It creates problems both for belief-dependent and belief-independent processes. We may take the example of introspection. Introspection is a belief-independent process. It is a relevant type for all its instances. Hence, all introspective beliefs are equally justified. But this is highly implausible. Introspective reports can be less well-justified when one is under the influence of drug, drunk or is attentive or otherwise preoccupied than when one is free from these conditions, resulting in different introspective reports. So it again becomes unclear what is to count as a single relevant type and whether any two token processes will be instances of the same relevant type. So The Single Case Problem arises.

One way to get around the problem is to refer back to the distinction Goldman introduces between two kinds of belief-forming processes: belief-dependent and belief-independent. The former processes are unconditionally reliable provided they generally produce true beliefs, the latter processes are conditionally reliable provided they generally produce true beliefs when their input beliefs are true. Perceptual process is evidently a belief-independent process, and reasoning is belief-dependent process, though Goldman does not mention that. We have already stated the problem with perception as a relevant type of belief-generating process. Feldman shows that The Problem of Generality seems to be extremely vexing in the case of belief-dependent processes such as reasoning. We may explain this contention in our own way. Let us assume that reasoning is a reliable process, i.e., reasoning results in more true beliefs

than false ones; let us assume that 'affirming the consequent' is a species of reasoning, and that it leads to more false beliefs than true ones. According to Goldman's principle (10), then, the belief resulting from a process of affirming the consequent is justified (assuming that there is no other reliable or conditionally reliable processes available to S, etc.) since it results from a reliable process, viz., reasoning; and also unjustified, since it results from an unreliable process, viz., affirming the consequent. Goldman is actually uncommitted to the result that a belief resulting from an unreliable process is unjustified, since he gives only a sufficient condition for justification. Feldman's own observation on this score is also instructive. He says that reasoning cannot be regarded as the single relevant type for all its instances, but there is also no acceptable way to slice it into several processes. In any piece of reasoning logical relations between propositions are crucial, and there are not distinct physical systems, as there are in the case of perception to which we might appeal. "Specifying relevant types in terms of forms of argument makes the theory susceptible to The No-Distinction and a problem similar to the Single Case Problem."[59]

We have recounted Richard Feldman's criticism of the reliability theory of justification, focusing on The Problem of Generality in both its aspects – The No-Distinction Problem and The Single-Case Problem. He has also shown that the problem cannot be avoided even when we have considered the several ways in which the theory can be developed.

We may now turn to another difficulty of the reliability theory of Goldman pointed out by Steven Luper-Roy.[60] So long we were concerned with types and tokens of belief-forming processes and their reliability, conferring justifiedness on beliefs. We may also proceed from the belief themselves and ask: When is a source reliable for a

certain sort of belief? To be reliable in this respect, a source must be reliable for a given type of belief. We entertain beliefs about different states of affairs. If we are specifically interested in a belief about tables, the source must be reliable for that and not for a belief about books; the reliability of the source for a belief in mountain-goats is not the same as the reliability of a source for a belief in buffaloes. This is called specific reliability by Luper-Roy. But the question we started with may be understood in another way. When is a source reliable in respect of all the beliefs it is capable of yielding? For example, when is a source reliable in respect of all the perceptual beliefs it is capable of yielding? This is unspecified reliability. So there is a distinction between specific and unspecific reliability. A source can yield many beliefs of one type and these beliefs are true. It may tend to produce very few beliefs about tables or buffaloes. Such a source is reliable as an unspecific sort contrasted to source specifically reliable for tables. So sources are reliable relative to the type of belief at hand. Luper Roy claims that this distinction between specifically and unspecifically reliable sources of beliefs is overlooked by Alvin Goldman. For a source which is reliable in his sense—its being conditionally or unconditionally reliable—need not be reliable relative to a given type of belief. The reliability of a source for belief about animals is not a reliable way to arrive at a belief about tables. And the reliable method of arriving at beliefs about tables is not actually a reliable method to arrive at beliefs about one's pet dog. This is because of the fact that there is a distinction between specific and unspecific reliability.

Many more objections are brought against the reliability theory, particularly of Goldman's, which is the best-developed reliabilist account of justification.

We have seen above that Feldman is one of the most through critics of reliabilism. What he does is consider extant replies to the problem and restricts himself to criticizing these replies. Yet he has not attempted to show that reliabilists are in principle unable to offer a plausible solution to the generality problem. Indeed, even if his criticisms are all perfectly successful, the most that they have shown is that we, at present, have no good way of distinguishing from many candidates just which process actually do generate a particular belief. If we look to the critics, we find that no one has shown that there is not, as a matter of fact, some thing, that is *the* process by which a given belief is generated. So long as there is such a process, the generality problem poses no threat to the reliabilist's conception of positive epistemic belief. Secondly, beliefs are not usually causally overdetermined. Though the causal chains that lead to a belief, may be quite complex, it is not usually the case that there are two or more such chains, each of which could have generated the belief in the absence of the other. Such overdetermination rarely occurs in doxastic contexts. If it does occur, then it will create problems for the reliabilist.

Suppose again, as the critic of reliabilism maintains, if we have no principled way to single out, from many plausible candidate processes, just which one actually caused a given belief. What follows? Only this: reliabilists would be unable to defend their epistemic assessments of particular beliefs. This is not as damaging as it might appear. This is a failure in demonstrative justification, and not in agent justification. If we lack any general criterion enabling us to isolate or articulate the causally efficacious processes, it does not follow that we are unjustified in our epistemic evaluations. It will only cast doubt on our ability to demonstratively justify our evaluations of the epistemic status of our beliefs.

We can further diminish the threat of the generality problem by asking why this problem does not arise for every other case in which we are interested in making causal attributions. Doctors, chemists, and biologists are not handicapped by their lack of solution to the generality problem. Progress in their disciplines very often amounts to distinguishing genuinely efficacious processes from their more general likenesses .Thus, different chemical components in a medicine may be all causally efficacious for cure of an illness. Do they bother to distinguish the one which is genuinely causally relevant from mere likenesses? If this happens without the aid of theoretical solutions to the problems of causation, then there is no reason to suppose that it cannot be done in reliabilist enquiry. In other causal enquiries the methods are not perfectly precise. But that does no prevent the archaeologist's efforts to reconstruct the causes of the degeneration of an ancient civilization or the disappearance of a population. It does not incapacitate a sleuth from the crime detection from issuing a report on the cause of death – whether, accident, suicide or murder. It does make an insurance officer from ascertaining the cause of a fire. In many such cases the ensuing reports are credible and justified, though their precision and accuracy do not exceed that associated with selecting a belief-forming process.

Goldman presents a refined version of reliabilism in his paper "The Internalist Conception of Justification".[61] In this paper he allows that the conditions by which a person is justified in changing his or her beliefs should be immediately accessible to the person, a point that seems clearly right. He suggests further, however, that what makes a complete set of justification principles a correct complete set is just the fact that if one always followed those principles in forming one's beliefs then (given the way the world is) one's beliefs would be mostly correct. He argues that there are no

other ways that the principles of justification can be validated. It is clear Goldman is advocating a conception of justification which is not primarily interested in the appraisal of beliefs. He no longer advocates "Historical Reliabilism" and moves further on to a regulative conception of justification.

Notes and References:

1. In George S. Pappas, ed., *Justification and Knowledge*, Boston: D. Reidel, 1979, p.1.

2. *Ibid.*

3. *Ibid.*

4. *Ibid.*, p. 2.

5. *Ibid.*, p.3.

6. *Ibid.*, p.4.

7. *Ibid.*, p. 5.

8. *Ibid.*

9. *Ibid.*, p.6

10. *Ibid.*

11. *Ibid.*

12. *Ibid.*

13. *Ibid.*, p. 8.

14. *Ibid.*

15. *Ibid.* p. 9.

16. *Ibid.*, p. 10.

17. *Ibid.*

18. This sort of view has also been suggested by Frederick Schmitt, "Knowledge, Justification and Reliability", *Synthese*, 40, 1981, pp. 409-17.

19. "Reliability and Justification", *Monist,* Vol. 68, No. 2, 1985, p. 159.

20. "What is "Justified Belief", *op. cit.* p.12.

21. *Ibid.*

22. *Ibid.*

23. *Ibid.*

24. *Ibid.*

25. *Ibid.*, p. 13.

26. *Ibid.*

27. *Ibid.*

28. *Ibid.* Original emphasis.

29. *Ibid.*, pp. 13-14.

30. *Ibid.*, note[10], p. 23.

31. *Ibid.*, p. 14.

32. See for example R. Chisholm, *The Foundations of Knowledge*, Minneapolis, MN: University of Minnesota Press, 1982, pp. 57-58.

33. "What is Justified Belief", *op. cit.*, p. 15.

34. *Ibid.*

35. *Ibid.*, p. 16.

36. *Ibid.*, p. 17.

37. *Ibid.*, p. 23.

38. Laurence Bonjour in *Externalist Theories of Empirical Justification,* in French, Uehling, Wettstein, eds., *Midwest Studies in Philosophy* V, University of Minnesota Press, 1980, pp. 27-51. Cited in Richard Feldman, "Reliability and Justification", *Monist*, ...op.cit., p.160, has proposed as counter examples to the reliability theory cases in which a person believes things as a result of clairvoyance. In his examples, clairvoyance is a reliable process but the person has no reason to think that it is

reliable. Bonjour claims that the reliability theory has the incorrect consequence that the person's beliefs are justified.

39. "What is Justified Belief?" *op. cit.*, p. 18.

40. *Ibid.*, p. 20.

41. *Ibid.*

42. *Ibid.*, p. 11.

43. *Ibid.*

44. *Ibid.*, p. 20.

45. *Ibid.*, p.1.

46. *Ibid.*, p. 20.

47. *Ibid.*, p. 13, italics original.

48. *Ibid.*, p. 12, italics original.

49. *Ibid.*

50. Richard Feldman, "Reliability and Justification", *Monist, op. cit.*, p. 160.

51. *Ibid.*

52. *Ibid.*, p. 162.

53. *Ibid.*

54. *Ibid.*

55. *Ibid.*, p. 163.

56. *Ibid.*, pp. 163-164.

57. *Ibid.*, p. 164.

58. *Ibid.*, p. 165.

59. *Ibid.*, p.171.

60. Steven Luper-Roy, "The Reliability Theory of Rational Belief", *Monist,* Vol. 68, No.2, 1985, pp. 203-225.

61. French, Uehling, and Wettsein, eds., *Studies in Epistemology, Midwest Studies in Philosophy* V, Minneapolis, MN: University of Minnesota Press, 1980, pp. 27-52.

Chapter V

TOWARDS NEW HORIZON

In the foregoing chapters we have made an attempt to understand and evaluate Alvin Goldman's causal account of knowledge and the subsequent modifications proposed by him. We have not so far taken up a question which in lurking in Goldman's causal-reliabilist account. It is about Goldman's manner of determining the traditional approach to epistemology. It has been said that Goldman's approach to epistemology, his manner of doing it, gradually veers towards what is known nowadays as naturalized epistemology. What, then, is naturalized epistemology? What it might be to naturalize epistemology? To naturalize epistemology would be (a) to be specific about what kinds of cognitive processes are at work. This may mean, for example, adverting to aspects of contemporary cognitive theory, such as the computational model of mind, and (b) to show how these specific cognitive processes interact with the context of the epistemic agent.

We owe this conception of naturalized epistemology to W.V.O.Quine who treats knowledge as a natural phenomenon, to be studied by the procedures of science. Most of Quine's own work in epistemology is an articulation and defense of this very general conception. Knowledge consists in tracing connections between theory and evidence in psychologically realistic fashion, to see how our knowledge is, in fact, related to the evidence we have. Epistemology of this kind is thus a branch of psychology.

Let us look back to what the traditional problems of epistemology are. When Plato tried to distinguish in the *Theaetetus* between mere belief and knowledge, as an attempt to answer the skeptical doubts concerning the possibility of knowledge of the external world, he created, we may say, what has come to be known throughout the history of philosophy as epistemology, the main concern of which is to determine the nature, the scope, the sources of human knowledge. These problems, which are known as the traditional problems are to be determined, according to the traditional approach, by using conceptual, logical, definitional analysis, not by any empirical investigation. Such a view of epistemology is rejected partially or wholly in different ways and for various reasons by the recent trend known as 'naturalized epistemology.'[1]

The source of much of the recent interest in naturalized epistemology is W.V.O.Quine.[2] According to Quine, epistemology can be restricted to science. Quine, who is a staunch supporter of naturalized epistemology, holds that it simply falls into place as a chapter of psychology and hence, of natural science. It studies a natural human phenomenon, viz., a physical human subject. A conspicuous difference between old epistemology and the epistemological enterprise in this new psychological setting is that we can now make free use of empirical psychology. To quote his words:

> The old epistemology aspired to contain, in a sense, natural science; it would construct it somehow from sense data. Epistemology in its new setting, conversely, is contained in natural science, as a chapter of psychology. But the old containment remains valid too; in its way. We are studying how the human subject of our study posits bodies and projects this physics from his data, and we appreciate that our position

> in the world is just like his. Our very epistemological enterprise, therefore, and the psychology wherein it is a component chapter, and the whole of natural science wherein psychology is a component book – all this is our own construction or projection from stimulations like those we were meting out to our epistemological subject. There is thus reciprocal containment, though containment in different senses, epistemology in natural science and natural science in epistemology.[3]

The above implies at least two things: (1) Eliminating traditional epistemology as an inquiry into the nature, the limit and the sources of knowledge in favour of science or psychology. By doing psychology, i.e. by discovering the processes by which we actually arrive at the belief we ought to[4] because the processes by which we arrive at the latter beliefs are just the same as those by which we arrive at the former. After psychology nothing is left for epistemology. (2) The problem of justification is answered from within science, is given a naturalistic account. "We gave up trying to justify our knowledge of the external world by rational reconstruction"[5]. Elsewhere he says, "Justification is not dropped, it is neutralized"[6]

Naturalization in philosophy has a long and distinguished heritage. There have been attempts in philosophy to assimilate problems of philosophy to science. The logical positivists talked of "the unity of sciences". That science is a unity, for Carnap, means that all empirical statements can be expressed in a single language, all states of affairs are of the one kind, and are known by the same method. Following Otto Neurath, he argues that this fundamental language is the language of physics in which all the propositions of science that are to be tested by reference to experience, can be formulated. The unity of science is, then, due, not only to the unity of the method they

all use, but also due to the unity of the object, i.e., yielding empirical knowledge of the world. Karl Popper also asserted in *The Logic of Scientific Discovery* that the main problem of epistemology is and has always been the growth of knowledge. He seeks to refocus the problem of knowledge as the problem of the growth of knowledge. The recent trend of naturalized epistemology is restricted to doing science. After psychology, nothing is left over for epistemology. As it has been put by Hillary Kornblith, Quine claims that, having encouragement in Darwin, nature has endowed us with a predisposition for believing truths, and that we arrive at belief in just the way we ought to, what we need is only to discover the processes by which we ought to arrive at beliefs, because in this way we discover at the same time the processes by which we ought to arrive at beliefs. Then the epistemological enterprise will be replaced by empirical psychlogy.[7] Quine does not want the question of justification as the original problem to be dropped from epistemology but only to be naturalized. For Quine, the scientific knowledge is the nature, the scope and the limit of knowledge. Beyond the scientific facts or outside science, we cannot hope to get knowledge. The source of knowledge, as he states explicitly, is the combination of the subjective and the objective, i.e., "The contribution of the world and the contribution of the knowing or perceiving subject". Quine's naturalized epistemology, in this way, seems to give an answer to the traditional question of epistemology: how is knowledge possible?

II

What is Goldman's connection to this recent trend in epistemology? Goldman focuses on the notion of epistemic justification in terms of psychological processes. His thesis in this respect is known as the thesis of reliabilism. This represents the naturalized epistemologists' answer to the question of justification. And his paper

"What is Justified Belief?" has been printed in a recent anthology on naturalized epistemology, edited by Hilary Kornblith which has been made mention by us. Goldman's solution to the Gettier problem is a radical one in that it abandons the idea that knowledge requires evidence or justification, and tries to explain knowledge as true belief which satisfies some causal or reliability condition. Reliability is what he adds to true beliefs instead of evidence or justification. Goldman came to hold such a view several years before he published "Discrimination and Prceptual Knowledge". And defends this view in "What is Justified Belief?"

Though Goldman was not explicitly discussing naturalism in this paper, the things he mentions are pointers to the interpretation his theory receives. He suggests that the crucial things about sentences using the terms like 'justified', 'warranted', 'has(good) grounds', 'has reason (to believe)', 'knows that,' 'sees that', 'apprehends that', 'is probable'(in an epistemic sense), etc., seems to do more than merely describing how things are. They say how something is to be evaluated from an epistemological perspective.[8] He provides a list of non-epistemic terms: believes that, is true, causes, it is necessary that, implies, is deducible from, is probable (either in a frequency or in a propensity sense)[9]. He says, "In general, (purely), doxastic, metaphysical, modal, semantic or syntactic expressions are not epistemic."[10] According to him, if epistemic terms are to make any sense at all, they must be understood in terms of items such as those on the list of non-epistemic terms. This is in contrast to the traditional epistemologists who formulate their analysis using evaluative terms.

In place of evidentiary support for justification, Goldman supplies the causal-reliabilist account. The simplest version of the causal theory says that a belief p is

justified when the fact p is causally connected with the belief that p. This theory invokes facts, beliefs and causal connections – all terms acceptable to the naturalist. When he speaks of reliabilism, he speaks of terms which are naturalistically respectable causal terms only and are not committed to any troubling non-naturalism. In fact, Goldman compares his project to naturalism in ethics, in which evaluative terms are defied naturalistically in terms of pleasure or happiness.[11]

The most obvious place where psychology matters in the reliability enterprise is the identification and evaluation of believing processes. It is psychology which tells us what processes cause our beliefs and it is psychology which enables us to judge their reliability. Philosophically, we can say that the belief (if justified and true) is knowledge if it was caused in a suitably reliable way. The question whether it was caused in such a way, however, is a question for empirical science.

Goldman's approach to epistemic justification is also reliabilist and grounded in science. The core of his view is that justification is at least partly a matter of beliefs' being produced by reliable cognitive processes. Goldman has made many modification of his view and he has worked out its details in various ways at different times. However, in one of his early papers, he comes out vividly on his views on epistemology naturalized. In the concluding paragraph of "A Causal Theory of Knowing" Goldman vindicates the naturalized approach.

> The analysis presented here flies in the face of a Well-established tradition in philosophy, the view that epistemological questions are questions of logic or justification, not causal or genetic questions. These traditional views, however, must not go unquestioned. Indeed, I think my analysis shows that the question of whether someone knows a certain proposition is, on part, a causal question...[12]

The analysis presented here flies in the face of a Well-established tradition in philosophy, the view that epistemological questions are questions of logic or justification, not causal or genetic questions. These traditional views, however, must not go unquestioned. Indeed, I think my analysis shows that the question of whether someone knows a certain proposition is, on part, a causal question...[12]

The causal-reliabilist approach is further pushed forward in " Discrimination and Perceptual Knowledge." Goldman contrasts his anslysis with the Cartesian perspective in epistemology as overintellectualized and thereby leaves open the possibility of naturalization. In a revealing passage of the paper, he says as follows:

> The trouble with many philosophical treatments of knowledge is that they are inspired by Cartesian like conception of justification or vindication. There is a consequent tendency to intellectualize or overrationalize the notion of knowledge. In the spirit of naturalized epistemology, I am trying to fashion an account of cognitive life, in connection with which, I believe, the term 'know' gets its application. A fundamental facet of animal life, both human and infra-human, is telling things apart, distinguishing predator from prey, for example, or a pretective habitat from a threatening one. The concept of knowledge has its roots in this kind of cognitive activity.[13]

The above shows that what cases of knowledge, whether perception or inference or reasoning has in common in a relational process, it has to do with how our beliefs are produced. Epistemology is not so much concerned with coming forward with adequate defense, good reason, or justification in favour of belief. "Instead, what

is required is a certain sensitivity to features of the environment. Our cognitive processes result in knowledge when they manifest a stable disposition to produce beliefs which are an accurate reflection of the agent's environment."[14]

Perhaps, because of this in Goldman's view, it is necessary also to construct a theory of what epistemic justification really is, as opposed to how commonsense takes it to be. The theory will be grounded in our psychological understanding of how beliefs are formed and it will include assessment of these processes in terms of reliability. To be 'suitably reliable' a belief-forming process must have a greater propensity to produce more true beliefs than false ones and the process' own causal ancestry must have a greater propensity to produce reliable processes than unreliable ones. Though Goldman argues for this view of knowledge on primarily a-priori grounds, e.g., by considering how well it captures our intuitive classifications of beliefs as cases of knowledge or not, the theory itself gives empirical science an important place in our understanding of knowledge. Goldman's naturalism is the view that epistemology need help from sciences, specially psychology. He says:

> ...to find out whether we know, we need to ascertain the properties of our cognitive processes. This is where psychology enters the picture. Psychology can (in principle) tell us about the nature of our cognitive processes. When these processes are spelled out, we can try to determine their possibility.[15]

Again,

> ... psychology is needed not merely to tell us whether we do know. The reliability-process theory of knowing entails the logical possibility of knowledge, but it does not entail that knowledge is humanly possible. It is humanly possible only if humans have suitable cognitive equipment. And this is something which we can best be appraised only with the .help of psychology.[16]

The important point that Goldman saysis that knowledge is reharded as a human phenomenon and not something of purely conceptual concern. However, unlike Quine, Goldman is concerned with such traditional epistemological problems as developing an adequate theoretical understanding of knowledge, justified belief, and truth. Also, in contrast to Quine, He does not see epistemology as part of science. Instead, Goldman thinks that answering traditional epistemological questions requires both *apriori* philosophy and the application of scientific results. To distinguish his position from Quine, he say:

> In saying whether we do or can know depends on psychological Facts, I partially con cur with Quine when he says that "skep-tical doubts are scientific" doubts. But my agreement is only partial. Some routes to skepticism arise from concern over the propriety of crediting someone with knowledge if certain logically possible alternatives cannot be excluded. The best way to counter this skeptical maneuver is though a satisfactory analysis of knowledge, not through psychology or other branches of science[17]

Hence we cannot perhaps say that he was an unmitigated naturalist in epistemology. However, in his later works like Liaisons: Philosophy Meets the Cognitive and Social Sciences, he has engaged himself with the relation of cognitive sciences to philosophy and sociology of epistemology.[18] It is relevant in this connection the words of Kornblith:

> It seems that investigation into knowledge must take place at a number of different levels. We must examine the various psychological mechanisms by which knowledge is produced and retained in order to see what, if anything they have in common. ... In addition, as man have argued, there seems to be an important social element in knowledge. In many of the most central cases, social factors play a role in the production, retention, and dissemination of knowledge. Investigation of these social factors is likely to reveal features of knowledge that are easily overlooked in the investigation of the psychological mechanisms of individual knows.[19]

Notes and References:

1. A very good detailed survey of naturalized epistemology has been that of J. Maffie, "Recent Works on Naturalized Epistemology", *American Philosophicl Quarterly*, 27, No. 4, 2002, pp.281-293.
2. W.V.O.Quine, in "Epistemology Naturalized", !969, reprinted in *Naturalizing Epistemology*, ed. H. Kornblith, Cambridge, MIT Press, 1985.
3. *Ibid.*, pp.23-24.
4. *Ibid.*, p.5
5. *Ibid.*, p.25.
6. Quine, "Reply to Lauener", in *Perspectives on Quine*, eds. R. Barret and R. Gibson, Basil Blackwell, 1990, p.229.
7. Hilary Kornblith, ed. "Naturalizing Epistemology", in *The Blackwell Guide to Epistemology*, Cambridge, MIT press, 1985, p.5.
8. Alvin Goldman, "What is Justified Belief?", in *Justification and Knowledge*, G. Pappas ed., D. Reidel Publishing Co., 1979, pp.1-2.
9. *Ibid.*, p.2.
10. *Ibid.*
11. *Ibid.*, p.1.
12. Alvin Goldman, "A Causal Theory of Knowing", *The Journal of Philosophy*,24, 1967, p.372.
13. Alvin Goldman, "Discrimination and Perceptual Knowledge", *The Journal of Philosophy*, 73, 1976, pp.790-791.
14. Hilary Kornblith, "In Defense of a Naturalized Epistemology", in Greco and Sosa , eds., *The Blackwell Guide to Epistemology*, 1999, p.162.

15. Alvin Goldman, "Knowledge" in *Epistemology and Cognition*, Cambridge, MA: Harvard University Press. 1986, p.57.

16. *Ibid.*

17. *Ibid.*

18. *Liaisons: Philosophy Meets the Cognitive and Social Sciences.* Cambridge. MA: MIT Press, 1992.

19. Hilary Kornblith, *op.cit.*, p162.

Chapter VI

THE NYĀYA VERSION OF THE CAUSAL THEORY OF KNOWLEDGE

Causal Theory of Knowledge may be described as the view that an agent knows that something is so when there is some appropriate causal connection between the fact that it is so, and the agent's belief. The clearest example is direct perception, where the fact that there is a chair in the room causes my visual state of seeing that there is, and hence causes my knowing that there is. Difficulties include identifying the appropriate relations, extending the idea to less direct cases, especially those involving such apparently non-causal things as abstract objects, and accommodating examples where there may be a causal connection, but it would be most unreasonable of the agent to believe that there is. There is then the notion of deviant causal chain to test and refine causal theories of perception and memory. Suppose, it is suggested that for me to remember an event it is enough (a) that I witnessed it, and (b) that this was the original cause of my present thought about it. Then a deviant causal chain might be that I witnessed the event because of the fact that I wrote about it in my diary, and on now reading the diary think about. A causal chain is in place but it is not enough to establish that I remember the event; it is consistent with this story that I have forgotten it entirely.

However, as for the epistemological theories in the schools of thought in India there is a strong inclination towards a causal explicability of the concept of nowledge.It appears that they seek to answer the Kantian-looking question: How is knowledge possible?

The Sanskrit word for knowledge is pramā, which is defined as yathārtha anubhava, that is valid cognition. There are as many as four, and in some cases six

varieties of valid cognition. The difference between them is said to be constituted by the difference of pramāṇas or instruments of validity, called karaṇas, which render the validity of the cognition possible.

There is a sense in which the sense of cause is built into the notion of karaṇa. A valid cognition or yathārtha anubhava arises or is brought about by the instrumentality involved. A karaṇa is the means through which pramā arises. It is a causal process and does not admit of deviation if all the processes of the causal process are properly attended to. We propose to consider the case of the causal theory of knowledge in the light of Nyāya epistemology.

Let us begin by noting the definitions pramā and pramāṇa. A true or valid cognition is pramā, while pramāṇa is the means of true cognition. For Nyāya cognition is not self-validating. It holds on to the thesis of parathprāmāṇyavāda. Hence, the question or issue of causal explicability of pramā arises.

It is often held that the core of the Nyāya theory of knowledge is constituted by defining pramā and apramā in respect of utpatti (genesis) and jñapti (ascertainment). Pramā is said to be yathārthānubhava, meaning veridical non-recollective cognition. Jñāna or cognition is either smṛti, that is, recollective cognition, or anubhava. Anubhava is a cognition other than recollective cognition: Smṛtibhinna jñāna. Recollective cognition is not pramā. A non-recollective cognition can be yathārtha or true only in so far as it is an exact reproduction of a true non recollective cognition of the same object, which the subject previously had. Smṛti has no independent claim to truth, its truth can be said to be borrowed from that of its cause, that is, the previous non-recollective cognition of the same object. In the primary sense of the term 'veridical' smṛti does not qualify, for it does not correspond to its object at the time of its occurrence.

But what does it mean for a cognition to be true or veridical? It is held that a cognition is true if it is arthāvyabhichārī, i.e., non-discrepant with its object. That means if a cognition represents an object as it really is, then the cognition is true. For Nyāya, the truth of a cognition depends on the actual existence of the relational complex represented by the cognition, in the objective world. The relational complex is known as or called viśiṣṭa-viṣaya. Accordingly a veridical cognition is described as tadvad viśeṣyakatvā vacchinna tat prakārakānubhava. This how Viśvanāth has put the matter in Bhāṣāpariccheda[1] (Kārika and Muktāvali 136).

In order to know things as they are, we are required to have some epistemic conditions fulfilled. Epistemic conditions can be said to be fulfilled when a pramāṇa is employed as a means of knowing things. A pramāṇa is a special causal condition and as such it is what enables a cognition to represent an object as it really is. Pramā is said to be pramāṇa janya that is caused truth of a cognition by pramāṇa. The, then, is dependent on a set of two conditions, one ontological, and the other epistemic. When the two conditions are fulfilled in the case of arthāvyabhicārī, a cognition comes out true. The two conditions are importantly significant, since for Nyāya, unlike Mimāmsā, a cognition does not reveal itself, it is revelatory of the object alone. This Nyāya thesis implies that there is a cognition is a higher order statement, only introspectively available by anuvyavasāya. Even then it would not be apparent that the cognition in question is pramā. The property of being pramā or pramātva is to be pragmatically verified. If on the basis of a cognition we succeed in having the objects of our desire (saphala pravṛtti) the cognition could then hold as pramā. Pramā alone leads one to successful activity; it is to be inferred post eventum.

The epistemic condition for availing oneself of pramā goes by the name pramāṇa. A pramāṇa is an instrument (karaṇa) of pramā. A pramā is caused by pramāṇa. Or to speak alternatively, pramāṇa is pramākaraṇam. This is the classical Nyāya position held by

Vātsyāyana in his bhāṣya on Nyāya Sūtra2 (1.1.3). The word karaṇa belongs to a set of general terms of Indian Philosophy, and it means causal conditions conducive to the production of effect. A karaṇa is the special cause or the most effective cause of an effect. A karaṇa is unique as a cause, asādhāraṇa vyāpāra, i.e., the unique operation of which the effect is the result. The causal condition immediately after the occurrence of which the effect occurs is the most effective cause or the karaṇa. Summarily speaking the concept of pramāṇa may be explicated as that causal condition which is immediately followed by its result. A pramāṇa is a pramākaraṇa.

There is also the view advanced by Jayanta Bhatta that karaṇa is the aggregate of causal conditions, and that until the aggregate of the causal conditions is complete, the production of the effect cannot be said to be inevitable. This is the view put forward in the Nyāya-mañjarī.

One can appropriately ask: does a pramāṇa always produce or yield pramā? Apropos the standard definition, pratyakṣa pramāṇa is either the sense-organ or the specific operative relation of the sense organ with the object (indriyārtha Sannikarṣa,).But is it the case that whenever we perceive through our sense the cognition is true? If it were the case there would not have been instances of illusion or misperception. Hence the sense-organ or its relation with the object is the accredited pramāṇa, it pramā results contingently, sometimes we have pramā, at other times there occurs apramā. In order to circumvent the impasse, Nyāya thinkers propose the thesis of paratah prāmānyavāda in respect of both the genesis and ascertainment of pramātva or prāmānya.

Just as there may be common sense-data for veridical perception and hallucinations, so there are causal conditions common to both pramā and apramā. Hence, the causal conditions for pramā have got to be differentiated from those responsible for apramā. It is argued that for each instance of pramā there is a guṇa or excellence by which a karaṇa

must be qualified. Only if the karaṇa is qualified by guṇa, the karaṇa can be said to be pramākaraṇa. The Kariakās no. 131-134 of the Bhāṣāpariccheda3 state explicitly that the guṇa in the case of pratyakṣa is the relation of the sense-order with the object which is the actual possessor of the property which figures as the qualifier in the resulting perceptual cognition. When there is a lack of guṇa, the sense-organ or the sense-object relation would fail to produce a true perception or pratyakṣa pramā. Therefore, the sense-organs can be pramāṇa only if they are qualified by the guṇa. There are different guṇas which give rise to pramātva in different types of pramā. For anumiti it is yathārtha parāmarśa, for upamiti it is yathārtha sādṛśya jñāna, and for śabda-jñāna it is yathārtha vākyārtha jñāṇa are the different guṇas for different pramās. Absence of guna is called doṣa or the condition that prevents the possibility of pramā in respective cases. The karaṇa or the means of cognition must be free from defects or must not be associated with any defect that might stand in the way of cognising an object as it really is. If follows then that the karaṇa is neutral to truth and falsity of a cognition, and it attains or acquires the status of pramākaraṇa only if it be qualified by the excellence (guṇa-viśiṣṭa) and is free from defects (aduṣṭa or doṣābhāva-viśiṣṭa). Correspondingly with the guṇas attending the various veridical cognitions, we may take note of the defects responsible for erroneous anumiti, upamiti and śabda. Respectively they are erroneous parāmarśa, erroneous Sādṛśya jñāna, and erroneous apprehension of the vākyārtha. It appears that Viśvanātha's intention is to suggest that doṣas are causally responsible for apramā, while guṇas are the causes for cases of pramā. This is evident by the conception of pramā as properly caused cognition or janya jñāna, and as such distinguished from apramā. Pramā is bhramabhinnam [4].

Now, by holding on to a causal theory of knowledge does itself solve the epistemic difficulties. They are dilemmatic in nature: (a) A person, for instance, misperceives steam to be smoke, and on the basis of his knowledge that smoke is pervaded by fire, he infers

the presence of fire at the place where he perceived smoke. Eventually he goes over to that place only to find that there was fire, no smoke at all, what he perceived to be smoke was but steam. In the case under consideration the inferential cognition does correspond to fact. The question however is: Can the karaṇa be regarded as pramāṇa? If not, the inferential cognition can hardly be said to be obtained through a pramāṇa. The out of the problematic situation could be suggested in the following manner: The guṇa required for the generation of pramātva of an anumiti is yathārtha parāmarśa. This consists in cognising the pakṣa as qualified by the hetu which is pervaded by the Sādhya. It is held that unless the parāmarśa is valid, the anumiti-karaṇa is either the parāmarśa itself or vyāptijñāna (i.e., the cognition to the effect that the hetu is pervaded by the sādhya) cannot be characterised by the guṇa. A parāmarśa cannot be true unless the hetu actually characterises the pakṣa and it itself is actually pervaded by the sādhya. The parāmarśa is not true because the hetu is not present in the pakṣa. In the case under consideration the smoke is the hetu, which is not present at the place where the presence of fire is inferred. So the anumiti-karaṇa is not characteised by the guṇa, and hence should not be regarded as pramāṇa.

Again, let us suppose that our perceiver sees that smoke is co present at the place along with fire and steam. Parāmarśa in this case corresponds to the fact, and we would be tempted to call it true. But is the parāmarśa a real instance of pramā? The smoke is indeed present, but our perceiver did not see it. He perceived instead steam to be smoke. In his cognition the object which appeared as the viśeṣya or subject is steam, and steam, as we all know, lacks the property of smokeness (dhūmatva), while the property that appeared as the qualifier (viśeṣaṇa) is smokeness. Nyāya requires that a pramā has got to be tad vad viśeṣyakatva avacchinna tat prakāraka anubhava.[5] All that the explanatory normative statement means is that the property which appears as the qualifier in the

cognition has got to be possessed by the object which appears as the subject in the same cognition. This truth-condition is not satisfied by the parāmarśa. A parāmarśa is a direct cognition yielded by sense-object contact. In the case under consideration both smoke and steam are co-present, though the cogniser's eyes are in contact with the steam alone. Hence steam is the subject to which smokeness is being wrongly attributed by the cogniser. In the absence of smokness in the steam with which the cogniser's eyes are in contact, there is absence of the guṇa, namely, viśeṣanavad viśeṣya sannikarṣa, i.e., sense-contact with the thing which is the possessor of the property which appears as the qualifier. Thus the parāmarśa is false; the karaṇa of anumiti lacks the guṇa required for anumiti pramā properly so-called. In the case under review the inferential cognition (anumiti) turns out to be true, yet it cannot be said to be pramāṇa-janya, i.e., caused by pramāṇa.

In the two problematic instances the karaṇa is either vitiated (= defective) or lacks the relevant guṇa. Even though the cognition be pravṛtti samvād or happen to lead to successful activity. The pragmatic test does not save the epistemic uneasiness. The cognition is arthāvyabhicārī, non-discrepant with the object, yet leads to successful activity. The question that arises in the context is that (a) whether cognition non-discrepant with the object should be regarded as pramā in spite of the fact that it is not produced by a pramāṇa? The cognition is pramāṇa janya or caused by a pramāṇa. Again, further, (b) if the perception or cognition of steam for smoke be evaluated as pramā, should its karaṇa, though defective or lacking in guṇa be regarded as pramāṇa? The problematic instances are called from the dialectics of Śriharṣa's in Khaṇḍanakhaṇḍakhādya.[6]

It remains to be seen how Nyāya would come up with a rejoinder. We have already noted the fact that Nyāya Theory of Knowledge comprises the notion of pramā and pramāṇa, both in respect of genesis of pramātva and its ascertainment. We found also that

Nyāya is likely to draw a distinction between a pramā which is obtained through some pramāṇa and any yatharthānubhava irrespective of its obtaining it. Such a distinction may not be incompatible with Nyāya theory. This can be argued unexceptionably.

The Nyāya definition of pramāṇa implies a causal relation between pramāṇa and pramā. And giving and accepting the relation, it follows that no occurrence of a pramā without a pramāṇa would be admissible for the theory. The property of pramāṇajanyatva seems to be an essential feature of pramā, even though the property is not mentioned in the definition of pramā, least it should move in a circle. It is of course clear that in absence of the said property no cognition would be deemed as pramā, however much it be a case of yathārthānubhava.

The claim to pramātva on behalf of a piece of cognition has to be a two-fold affair: (a) it should and does lead to successful activity, and (b) it should have its cause, i.e., pramāṇa. A cognition might be yathārtha, yet it has to stand the test of having been caused by some pramāṇa. A cognition however true or yathārtha, availed of through an improper means should be refused the status of pramā.

The inclination to the causal explicability of a veridical cognition is so strong with Nyāya that in exceptional or accidental cases (Kākatālīya sambāda or yaddṛcchika sambāda) of true cognition, an unseen cause or adṛsta in the form of imperceptible consequences of the deeds of the knower in his previous birth has to be postulated. Uncaused occurrence of true cognition is a null concept for Nyāya. This process is of course resorted to only when perceptible causes are not available.

II

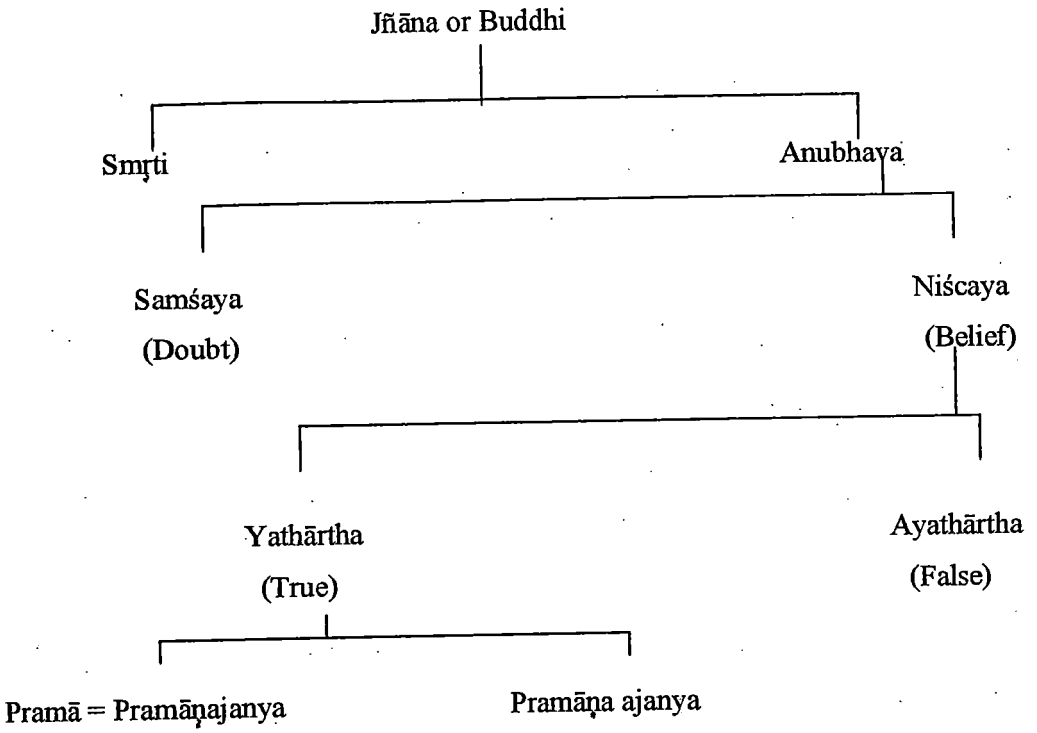
The insufficiency of yathārthānubhava in respect of pramā-pramāṇa correlation resembles closely the problem encountered the so-called JTB formula. To this problem Edmund L. Gettier had addressed himself very famously.

Pramā is said to be yathārtha niścayātmaka anubhavātmaka buddhi. In the light of the description, what is presupposed is that jñāna or buddhi is a mental state. Is pramā true belief, as it is put or held in Western epistemology? That it is so is put forward in a paper by Professor P.K.Sen[7]. Sen has argued that a pramā is a true belief (i.e., yathārtha niścayātmaka jñāna) brought about or (produced, caused) by pramāṇa. Pramāṇa is what is the cause of pramā. The element of causality of pramā in its definition renders it somewhat non-empty. There is a good deal of interdefining of the concepts of pramā and pramāṇa, as if in keeping with a net working model. Hence the definition of pramā in Nyāya is quite illuminative in the sense that pramā is related to some concepts in some identifiable ways. As an instance of net working model of definition Sen has referred to the interdefinability of truth-functional constants and the universal and existential quantifiers. Even though the concepts of pramā and pramāṇa are interdefined, the circularity involved is quite harmless in the model involved. Moreover pramā and pramāṇa are foundational notions of Nyāya epistemology, and such notions can only be apprehended in terms of interdefining the notions that form a cluster. That is the reason why there cannot be any definition of pramā independently of pramāṇa, and vice versa.

A karaṇa is a condition or causal factor. As a cause, a karaṇa is esteemed asādhāraṇa. By an asādhāraṇa kāraṇa is meant that it cannot occur without the effect following it immediately. In this sense the karaṇa is a sufficient condition of the event of which it is karaṇa. But what is no less interesting to note is that karaṇa is also the necessary condition of the effect in question. Sen refers to Viśvanātha's chracterising of causality anyathāsiddhiśunyasya niyata pūrvavartitā. The set of conditions is called karaṇkūta, out of which the asādhārana kāraṇa is selected in terms of two marks: (a) anyathāsiddhi śunyatā and (b) niyata pūrvavartitā. The first (a) stands for the sufficiency of the cause, while the second (b) stands for the necessity of the cause. Accordingly, if kāraṇa is an

asādhāraṇa kāraṇa, then whenever the effect is there, it is preceded by the cause. The occurrence of the cause is a necessary condition of the effect. Now given the view that the cause or the karaṇa is both a necessary and sufficient condition for the effect, then the pramāṇa which produces a pramā is both a necessary and sufficient condition of the pramā it produces.

An important consequence follows: If the pramāṇa is a necessary condition, then a pramā cannot be produced by anything which is not a pramāṇa. And if the pramā is a sufficient condition, then it cannot fail to produce a pramā. If the pramāṇa is both a necessary and a sufficient condition, then no pramā can ever be produced by anything which fails to produce a pramā but produces something else. By adding a reference to the causality of the belief understood as both a necessary and a sufficient condition, then the gap between knowledge and pramā is excluded. A true belief is a pramā if and only if it is brought about by a pramāṇa. Otherwise a guess or an illusion may give rise to a true belief, but would not always do so. The addition of the condition of causality shows that pramā is knowledge. The epistemic thesis of Nyāya may be represented schematically as under:



The schema may be summarised as giving a definition of pramā as Pramāṇa janya yathārtha niścayātmaka anubhavātmaka buddhi. A pramāṇajanya true belief is a justified. A belief in order to be pramā will have to be justified, and a belief is justified if and only if it is brought about by the right kind of cause. Conversely, a cause is a cause of the right kind if and only if it is such that it cannot produce anything but a true belief.

The Nyāya notion of justification is introduced in terms of causality. Sen suggests that according to Gettier's notion of justification, a belief which is false can also be justified. But to the Nyāya notion of pramāṇa, nothing else can produce a pramā, except a pramāṇa. Nyāya would rule out Gettier's counter-examples put forward on the assumption that a belief can be both false and fully justified. Nyāya conception of justification requires us to drop the assumption. It is a great advantage of the Nyāya view that the justification condition is so strong as to argue that pramā is something that is essentially produced by pramāṇa.

References:

1. Viśvanāth, Kārikāvalī-Muktāvalī of Bhāṣāpariccheda, translated into Bengali by Gopal Chandra Mukhopadhyaya Tarkatīrtha, University of Burdhaman, 1980, 136.

2. Vātsāyanabhāṣya on Nyāya Sūtra, 1.1.3.

3. Viśvanāth, Kārikāvalī-Muktāvalī of Bhāṣāpariccheda, op.cit Kārikāvalī-Muktāvalī of Bhāṣāpariccheda, op.cit., 131-134.

4. Bhāṣāparichheda with Siddhānta Muktāvalī, tr. Swāmi Madhavananda, Advaita Asrama, Calcutta, 1977, 132-134.

5. Viśvanātha's gloss on Kārikā no. 136 in Bhāṣāpariccheda.

6. Śriharṣa, Khandanakhandakhādya, ed. Swami Yogindrananda, Varanasi, 1979.

7. Pranab Kumar Sen, "The Concept of Pramā" in Essays in Indian Philosophy, ed., S.R.Saha, Jadavpur University, Calcutta, Allied Publishers, New Delhi, 1997. Also see, Srilekha Datta, "An Analysis of the concepts of Pramā and Pramāṇa in Nyāya" in Essays in Indian Philosophy, Jadavpur University, Calcutta, Allied Publishers, New Delhi, 1997

Note: The division of anubhava into saṁśaya (doubt) and niścaya (belief) is not actually shown in the texts, but it has been accepted by Nyāya thinkers. A yathārtha anubhava must be a niścaya, though every niścaya is not necessarily a yathārtha anubhava.

Bibliography:

Almeder, R.F. : "Defeasibility and Skepticism", *Australasian, Journal of Philosophy*, 51, 1973, pp.238-244.

_____ : "Truth and Evidence", *Philosophical Quarterly*, 24, 1974, pp.365-368.

_____ : "On Being Justified in Believing False Proposition", *Philosophia*, 1985.

Alston, W.P. : "Varieties of Privileged Access", *American Philosophical Quarterly*, 8, 1971, pp.223-241. Reprinted in *Empirical Knowledge*, Chisholm and Swarts, eds., Prentice-Hall, 1973.

_____ : "Two Types of Foundationalism", *Journal of Philosophy*, 85, 1976. pp-165-185.

Armstrong, D.M. : *Belief, Truth and Knowledge*, London: Cambridge University Press, 1973.

Audi, R. : "Reliabilism", *Synthese*, 55,1983.

Austin, J. L. : *Sense and Sensibilia*, Oxford, 1962.

Ayer, A.J. : *The Problems of Knowledge*, Penguin Books,1956.

_____ : *The Problems of Knowledge*, Pelican, 1957.

Basu, Sandhya : "Causality, Reliability and Knowledge", *The Journal of the Indian Academy of Philosophy*, 23, 1984.

_____ : "A Causal Explanation of the Concept of

Knowledge", *Bangladesh Journal of Philosophy*, 2, 1986.

_____ : *Justification: Concepts and Theories,* Kolkata, Progressive Publishers, 2003.

Berkeley, George : *A Treatise Concerning the Principles of Human Knowledge, Philosophical Works,* ed. M.R. Ayers, London: J. M. Dent & Sons, 1975.

Bhatta, Annam : *Tarka Samgraha Dipīkā,* tr. Swami Virupakshananda, Sri Ramakrishna Math, Madras, 1964.

Bhatta, Jayanta : *Nyāyamanjarī,* Summarised version in Karl H. Patter's *Encyclopaedia of Indian Philosophy*, vol.1.

Bhattacharyya, Sibajiban : *Doubt, Belief and Knowledge*, New Delhi, ICPR, in association with Allied Publishers, Kolkata, 1987.

Bonjour, Laurence : *The Structure of Empirical Knowledge*, Cambridge: Harvard University Press, 1985.

_____ : "Externalist Theories of Empirical Knowledge", in *Mid West –Studies in Philosophy*, V, *Studies in Philosophy*, French, Uehling, Wettstein, eds., Minneapolis: University of Minnesota Press, 1980. pp.27-51.

Chisholm, R.M. : *Perciving: A Philosophical Study,* Ithaca: Cornell University Press, 1957.

_____ : *Theory of Knowledge*, 1st ed., Englewood Cliffs: New Jersey, Inc., 1966.

_____ : *Theory of Knowledge*, 2nd ed., New Delhi: Prentice – Hall, 1977.

_____ : *The Foundations of Knowing*, Minneapolis: University of Minnesota press, 1982.

_____ : *Theory of Knowledge*, 3rd. ed., New Delhi: Prentice-Hall, 1992.

Chisholm, R.M and: Swartz, eds. *Empirical Knowledge*, Englewood Cliffs: New Jersey, Prentice-Hall, Inc.,1973.

Chowdhury, Sujata : *Nature of Knowledge*, Calcutta: Allied Publishers, 1996.

Clark, M. : "Knowledge and Grounds: A Comment on Mr. Gettier's Paper", *Analysis*, 24, 1964, pp.24-48.

Cohen, Stewart : "How to be a Fallibilist?", *PhilosophicalPerspectives*,2, 1988.

Collier, K. : "Contra the Causal Theory of Knowing", *Philosophical Studies*, 24, 1973, pp.350-351.

Cookwilson, John : *Statement and Inference*, Oxford: Clarendon Press, 1926.

Dancy, Jonathan : *Introduction to Contemporary Epistemology*, Oxford: Blackwell,1992.

Danto, A.C. : *Analytical Philosophy of Knowledge*, Cambridge:

Cambridge University Press, 1968.

Datta, Srilekha : "An Analysis of the Concepts of Prama and Pramana in Nyaya" in *Essays in Indian Philosophy*, Jadavpur University, New Delhi: Allied Publishers, 1977.

Davidson, D. : "Casual Relations", *The Journal of Philosophy*, 64, 1967, pp.691-703.

Davidson, D and Harman, eds. : *Semantics of Natural Language*, Boston.: Reidel, 1972.

Decartes, Rene : *Meditation on First Philosophy*, *Philosophical Works of Descartes*, 1, tr. by E.S. Haldane and G. R. T. Ross, New York: Dover, 1955.

Dicker, Georges : "Is There a Problem About Perception and Knowledge?", *American Philosophical Quarterly*, 15, 1978, pp.165-176.

_____ : *Perceptual Knowledge*, Dordrecht: Reidel, 1980.

Dretske, F. I. : "Conclusive Reasons", *The Australasian Journal of Philosophy*, 49, 1971, pp. 1-22. Reprinted in *Essays on Knowledge and Justification*, G.S. Papas and M. Swain, eds., Ithaca: Cornell University Press, 1978. pp. 41-60.

_____ : "Reasons and Consequences", *Analysis*, 28, 1968, pp. 166-168.

_____ : "Epistemic Operators", *The Journal of Philosophy*, 67, 1970, pp. 1007-1023.

_____ : "The Pragmatic Dimension of Knowledge", in *Perception, Knowledge and Belief: Selected Essays,* Fred Dretske, ed., Cambridge: Cambridge University Press,2000.

Duran, Jane : "Reliabilism, Foundationalism and Naturalised Epistemic Justification Theory", *Metaphilosophy*, 19, 1988.

Edwards, P. : *The Encyclopaedia of Philosophy*, New York, 1967.

Feldman, Richard : "Reliability and Justification", *The Monist*, 68, 1985, pp.159-174.

Foley, Richard : "What's Wrong with Reliabilism?" *The Monist*, 68, 1985, pp. 189-202.

Gettier, E.L. : " Is Justified True Belief Knowledge?", *Analysis*, 23, 1963, pp.121-123. Reprinted in *Knowledge and Belief,* A.P. Griffiths, ed., Oxford: Oxford University Press, 1969, pp. 144-146.

Goldman, A.I. : "A Causal Theory of Knowing", *Journal of Philosophy,* 64, 1967, pp.355-72.Reprinted in *Essays on Knowledge and Justification,* G. Pappas and M. Swain, eds., Cornell University Press, 1978,

pp. 67-87.

_____ : "Innate Knowledge", in *Innate Ideas*, S.P. Stich, ed., Berkely: University of California Press, 1975.

_____ : "Discrimination and Perceptual Knowledge", *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.

_____ : "What is Justified Belief?", *Justification and Knowledge*, G.S. Pappas, ed., D. Reidel Publishing Co., 1979, pp. 1-23.

_____ : "The Internalist Conception of Justification", *Midwest-Studies in Philosophy*, 5, *Studies in Epistemology*, Minneapolis: University of Minnesota Press, 1980, pp.27-51.

Ginet, Carl : "*Contra* Reliabilism", *The Monist*, 68, 1985, pp.175-185.

_____ : *Epistemology and Cognition*, Cambridge: Harvard University Press, 1986.

Greco, John : "Internalism and Epistemically Responsible Belief", *Synthese*, 85, 1990.

_____ : "Virtue and Vices of Virtue Epistemology", *Canadian Journal of Philosophy*, 23, 1993.

Grice, H.P. : "The Causal Theory of Perception", Aristotelian Society, Suppl. 35, 1961.

Griffiths, A.P. ed. : *Knowledge and Belief,* London: Oxford University Press, 1967.

Hamlyn, D.W. : *The Theory of Knowledge,* Mc Millan, 1977.

Harman, G. : *Thought,* Princeton: Princeton University Press, 1973.

_____ : "Reasoning and Evidence One Does Not Possess", *Midwest Studies in Philosophy,* vol. V, *Studies in Epistemology,* Minneapolis: University of Minneasota Press, 1980.

_____ : "New Implications of 'someone'", *Analysis,* 26, 1966, pp. 206-208.

_____ : " 'Someone' Renewed", *Analysis,* 1968.

Heller, Mark : "The Proper Role for Contextualism in an Anti-Luck Epistemology", *Nous,* 33, Supplement: *Philosophical Perspectives,* 13, *Epistemology,* 1999, pp.115-129.

Hoffman, William E. : "Almeder on Truth and Evidence", *The Philosophical Quarterly,* 25, 1975, pp. 59-61.

Hooker, M.K. : "In Defense of a Principle of Deducibility of Justification", *Philosophical Studies,* 24, 1973, pp. 402-404.

Hume, David : *A Treatise of Human Nature*, ed.., P.S. Ardal, London: Fontana/Collins, 1972.

_____ : *A Treatise of Human Nature*, Peter H. Nidditch version of L.A. Selby-Bigge edition, Oxford: Clarendon Press, 1974.

Kant, Immanuel : *Prolegomena* (1785), tr. by P.G. Lucas, Manchester University Press, 1953.

_____ : *Critique of Pure Reason* (1780 & 1787) tr. by N. Kemp Smith as *Immanuel Kant's Critique of Pure Reason*, London: Macmillan, 1929.

Kim, Kihyen : "Internalism and Externalism in Epistemology", *American Philosophical Quarterly*, 30, 1993.

Klein, P.D. : "Knowledge, Causality and Defeasibility," Journal of Philosophy, 73, 1976, pp.792-812.

Kornblith, Hilary : "Justified Belief and Epistemically Responsible Action", *Philosophical Review*, 92, 1983, pp. 33-48.

_____ : "Ever Since Descartes", *The Monist*, 68, 1985.

Lehrer, K : "Knowledge, Truth and Evidence", *Analysis*, 25, 1965, pp.168-175.

_____ : *Knowledge*, London: Oxford University Press, 1974.

_____ : "The Gettier Problem and the Analysis of

Knowledge", *Justification and Knowledge*, G. Pappas, ed., Dordrecht: D. Reidel, 1980.

_____ : *Theory of Knowledge*, London: Routledge, 1990.

_____ : "The Fourth Condition of Knowledge: A Defense", *Review of Metaphysics*, 24, 1977, pp. 122-128.

_____ : "The Coherence Theory of Knowledge", *Philosophical Topics*, 14, 1986.

_____ : "Meta Knowledge: Undefeated Justification", *Synthese*, 74,1988.

_____ : *Theory of Knowledge*, London: Routledge, 1990.

Lehrer, K.and Paxson, T.D.Jr. : "Knowledge :Undefeated Justified True Belief", *Journal of Philosophy*, 66, 1969, pp.225-237. Reprinted in *Essays on Knowledge and Justification*, Pappas and Swain, eds., Ithaca: Cornell University Press, 1978, pp. 146-154.

Levy, R. : "Misleading Defeaters", *Journal of Philosophy*, 75, 1978.

Locke, John : *An Essay Concerning Human Understanding*, ed., Peter H. Nidditch, Oxford: Clarendon Press, 1974.

Luper – Roy, Steven : "The Reliability Theory of Rational Belief", *Monist*, 68, 1985, pp.203-225.

Mackie, J. L. : *The Cement of the Universe – A Study of Causation*, Oxford, 1980. (Paperbdek edition).

Madhavananda, Swami,tr: Bhasa-Paricheda with *Siddhanta Muktavali*, Advaita Asrama, Calcutta, 1977.

Malcolm, N. : "Knowledge and Belief", *Knowledge and Belief*, ed., A.P. Griffiths, Oxford University Press, 1967.

Mayers, Robert G. and: Stern, Kenneth "Knowledge without Paradox", *Journal of Philosophy*, 70, 1973, pp.147-160.

Moore, G.E. : *Some Main Problems of Philosophy*, New York: Collier Books, 1953.

New, C.G. : "Some Implication of 'Someone'", *Analysis*, 26, 1966, pp.62-64.

Papineau, David : "Reliabilism, Induction and Scepticism", *The Philosophical Quarterly*, 42, 1992.

Pappas, G.S. and Swain, M. eds. : *Essays on Knowledge and Justification*, Ithaca: Cornell University Press, 1978.

Pappas, G.S. ed. : *Knowledge and Justification*, Dordrecht: D. Reidel Publishing Company, 1979.

Paxson, T.D. Jr. : "Professor Swain's Account of Knowledge", *Philosophical Studies*, 25, 1974, pp.57-61. Reprinted in *Essays on Knowledge and Justification*, Pappas and Swain, eds., 1978, pp.100-105.

Pollock, J.L. : *Knowledge and Justification*, Princeton: Princeton University press,1974.

_____ : *Contemporary Theories of Knowledge,* Totowa: NJ, Rowman and Littlefield Publishers, 1986.

Prichard, H.A. : *Knowledge and Perception,* Oxford: Clarendon Pres, 1950.

Quine, W.V.O : "Epistemology Naturalized", *Ontological Relativity and Other Essays,* New York: Columbia University Press, 1969.

Russell, Bertrand : *The Problems of Philosophy,* London: Oxford University Press, 1912.

Sarkar, T.K : *Knowledge, Truth and Justification.* New Delhi: Allied Publishers, 1992.

Saunders, J. T. and Champawat, N. : "Mr. Clark's Definition of Knowledge", *Analysis,* 25, 1964, pp.8-9.

Sen, P.K. : Unpublished article "A Note on Current Researches on Knowledge and Justification".

_____ : "The Concept of Pramā" in *Essays in Indian Philosophy,* ed., S.R. Saha, Jadavpur University, New Delhi: Allied Publishers, 1997.

Schmitt, F. : "Knowledge, Justification and Reliability," *Synthese,* 40, 1981, pp. 409-17.

_____ : "Knowledge, Justification and Reliability", *Synthese,* 55, 1983.

Skyrms, B. : "The Explication of 'X Knows that P'", *Journal of*

Philosophy, 64, 1967, pp.373-389. Reprinted in *Knowing: Essays in the Theory of Knowledge*, Roth and Galis, eds., 1970.

Sosa, E. : "The Analysis of Knowledge that P", *Analysis*, 25, 1964, pp.1-8.

_____ : "Two Conceptions of Knowledge", *The Journal of Philosophy*, 67, 1970. pp.59-66.

_____ : "Knowledge of Intellectual Virtue", *The Monist*, 68, 1985, pp. 226-247.

Sriharṣa : *KhandanakhandaKhādya*, ed. by Swami Yagindrananda, Varanashi, 1979.

Stahl, Donald E. : "Goldman on What Justifies Belief", Review article on "What is a Justified Belief?", *Analysis*, 42, 1982, pp.146-149.

Steiner, M. : "Platonism and the Causal Theory of Knowledge", *Journal of Philosophy*, 70,1973, pp.57-66.

Swain, M. : "Knowledge, Causality and Justification", *Journal of Philosophy*, 69, 1972, pp.291-300. Reprinted in *Essays on Knowledge and Justification*, Pappas and Swain, eds., Ithaca: Cornell University Press, 1978, pp.87-99.

_____ : "Epistemic Defeasibility", *American Philosophical Quarterly*, 11, 1974, pp.15-25. Reprinted in *Essays*

on Knowledge and Justification, Pappas and Swain, eds., Ithaca: Cornell University press, 1978, pp. 160-183.

_____ : "Some Revisions of 'Knowledge, Causality and Justification'", in *Essays on Knowledge and Justification*, Pappas and Swain, eds., Ithaca: Cornell University press, 1978, pp. 109-119.

_____ : "Reasons, Causes and Knowledge", *Journal of Philosophy*, 75, 1978, pp.229-248.

_____ : "Justification and the Basis of Belief", in *Justification and Knowledge*, edited by Pappas, G., Dordrecht: D. Reidel and Company, 1979.

_____ : *Reasons and Knowledge*, Ithaca: NY, Cornell University Press, 1981.

_____ : "Justification and Reliable Belief', *Philosophical Studies*, 40,1981, pp.389-407.

_____ : "An Alternative Analysis of Knowing', *Synthese*, 23, 1972, pp.423-442.

Thalberg, Irving : "In Defense of Justified True Belief", *Journal of Philosophy*, 66, 1969, pp.795-803.

Tolliver, J. : "On Swain's Causal Analysis of Knowledge", in *Essays on Knowledge and Justification*, Pappas and Swain, eds., Ithaca: Cornell University press, 1978,

pp.106-108.

Unger, P. : "Our Knowledge of the Material World", *American Philosophical Quarterly*, Monograph Series, 4, 1970, pp.40-61.

Vātsyāyana : *Vātsyāyana Bhāṣys on Nyāya Sūtra*(1.1.3).

Viśvanāth : *Kārikāvalī – Muktāvalī of Bhāṣāpariccheda,* trns. into Bengali by Gopal Chanda Mukhopadhyaya Tarkatirtha, University of Burdwan, 1980.

Vlastos, G : "Reasons and Causes in the *Phaedo*", *Philosophical Review*, 78, 1969, pp.291-325.

Woozley, A.D. : *Theory of Knowledge*, London: Hutchinson University Library, 1949.

——— : "Knowing and Not Knowing", *Proceedings of the Aristotelian Society*, 53, 1952, pp.151-172.

Zagzebski, Linda : "What is Knowledge?, *The Balckwell Guide to Epistemology*, ed. John Greco and Earnest Sosa, Blackwell Publishers, 1999.