The Search for the Fourth Condition

The “Gettier Problem”
Most philosophers took Edmund Gettier to have refuted the Justified-True-Belief (JTB) account of knowledge that had stood roughly since Plato. By producing cases we want to describe as having satisfied each of the JTB-conditions but which, for some reason, are not cases of knowledge, Gettier shows us that those conditions are not jointly sufficient. That doesn’t mean that the account isn’t on the right track, however. It doesn’t mean that the conditions aren’t each necessary for knowledge.

For example, suppose someone proposes to analyze the concept of a cheese danish along the following lines:

- $x$ is a cheese danish if and only if:
  1. $x$ possesses a thick, disk-like shape (of a certain “danishy” sort),
  2. $x$ contains cream cheese and is sprinkled with sugar.

This looks to be on the right track, but it doesn’t succeed as an analysis of the concept of a cheese danish. We can imagine an obscure joke shop (or singularly incompetent cook) producing an object that satisfies these two conditions, but which is made mainly of sawdust. Such an object might look like a cheese danish, it might have many of the qualities that cheese danishes typically possess, but it’s not a cheese danish. Call it a ‘joke-danish’ if you like, but note that modifiers often disqualify objects as the sorts of things they modify.\(^1\) Such an object — more exactly, our attitude toward that object — shows that the conditions (1) and (2) are in fact not jointly sufficient for something to be a cheese danish. But clearly, they might still be necessary. In order to be a cheese danish, a thing must contain cream cheese and be roughly danish. We might attempt to complete the analysis by adding a third condition which would render (1)–(3) sufficient to qualify something as a cheese danish — or perhaps it would take a fourth and fifth, or more.

Enough about pastry. What about knowledge? After Gettier’s terse and epochal paper, a cottage industry immediately sprang up in philosophy seeking the missing conditions in the analysis of knowledge. We shall look at three of these attempts in some detail and a few more glancingly.

Goldman’s Causal Theory
Let’s start with Goldman’s “Causal Theory” of knowing. One way of diagnosing the problem facing the Gettierized-knowers is that, though they happen to have justified and true beliefs, they are not correctly causally-related to the propositions in question. What does this mean? Well, that’s a difficult issue that Goldman leaves fairly open — perhaps to the detriment of his account. Nevertheless, we can get a sense of what this means by simply considering some cases and the role they play in his analysis.

In successful cases of perceptual knowledge, our beliefs are often caused by the objects about which we have knowledge. Say I know that there’s a red apple right in front of me. How do I? For one, it’s true (suppose); for two, I’m justified in believing it’s true. But Gettier shows us that not all justification amounts to knowledge. In this case, though, my justification seems impeccable: for it’s the apple itself (and not some peculiar Gettier scenario) that’s providing my justification. Literally: I believe there’s an apple here because the apple is causing me to have certain visual sensations. That kind of connection seems to be missing in a Gettier case. When Smith comes to believe that either Jones owns a Ford or Brown is in Barcelona, his belief is not caused by the fact that Brown is in Barcelona (the fact that makes the disjunction true).

The intuitive idea might be helped by considering more homely cases of causation. What is

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\(^1\) Not always: artificial light is light, though a rubber duck is not a duck and a false friend is no friend.
causation. As we shall see, this is a very deep and difficult metaphysical question. But like most deep and difficult metaphysical questions, you probably have an ordinary conception of it. It’s worth taking a quick diversion to get this idea clear.

Suppose I throw a rock at the window. It breaks. The rock caused it to break. More precisely, facts about the rock’s momentum and the glass’s physical properties caused it to break. More broadly, I caused the window to break because I caused the rock to gain the requisite momentum and trajectory. So we have a paradigm case of causation — or of a causal chain or sequence. Notice how one event can cause another without directly causing it.

Part of the philosophical difficulties in understanding causation involve getting clear on the notion of these direct causal relations. When do some events count as causally-related? The great Scottish philosopher, David Hume, toyed with the idea that “constant conjunction” — the idea that a certain event (a cause) is always followed by a certain other kind of event (an effect) — was all there is to causation. But that looks implausible. It might have been the case that just as the rock reached the window, a tiny explosive charge was detonated on the other side, resulting in the window’s shattering. Despite this immediate succession, however, it’s pretty clear that the rock did not cause the window to break! Sure, it would have if the other charge had not been fired, but that seems neither here nor there. The explosive charge and not the rock is responsible for the window’s shattering.

We will have to remain for now with this intuitive conception of causation and the assurance that we can spot genuine cases of causation, even if we can’t say precisely what makes them cases of causation — much like our predicament with knowledge.

“The Causal Theory of Knowing” (selections)

Alvin Goldman

Since Edmund L. Gettier reminded us recently of a certain important inadequacy of the traditional analysis of “S knows that p,” several attempts have been made to correct that analysis. In this paper I shall offer still another analysis (or a sketch of an analysis) of “S knows that p,” one which will avert Gettier’s problem. My concern will be with knowledge of empirical propositions only, since I think that the traditional analysis is adequate for knowledge of nonempirical truths.

Consider an abbreviated version of Gettier’s second counterexample to the traditional analysis. Smith believes

(q) Jones owns a Ford

and has very strong evidence for it. Smith’s evidence might be that Jones has owned a Ford for many years and that Jones has just offered Smith a ride while

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driving a Ford. Smith has another friend, Brown, of whose whereabouts he is totally ignorant. Choosing a town quite at random, however, Smith constructs the proposition

\[ (p) \text{ Either Jones owns a Ford or Brown is in Barcelona.} \]

Seeing that \( q \) entails \( p \), Smith infers that \( p \) is true. Since he has adequate evidence for \( q \), he also has adequate evidence for \( p \). But now suppose that Jones does not own a Ford (he was driving a rented car when he offered Smith a ride), but, quite by coincidence, Brown happens to be in Barcelona. This means that \( p \) is true, that Smith believes \( p \), and that Smith has adequate evidence for \( p \). But Smith does not know \( p \).

A variety of hypotheses might be made to account for Smith's not knowing \( p \). Michael Clark, for example, points to the fact that \( q \) is false, and suggests this as the reason why Smith cannot be said to know \( p \). Generalizing from this case, Clark argues that, for \( S \) to know a proposition, each of \( S \)'s grounds for it must be true, as well as his grounds for his grounds, etc. I shall make another hypothesis to account for the fact that Smith cannot be said to know \( p \), and I shall generalize this into a new analysis of “\( S \) knows that \( p \).”

Notice that what makes \( p \) true is the fact that Brown is in Barcelona, but that this 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 \( p \). If Smith had come to believe \( p \) by reading a letter from Brown postmarked in Barcelona, then we might say that Smith knew \( p \). Alternatively, if Jones did own a Ford, and his owning the Ford was manifested by his offer of a ride to Smith, and this in turn resulted in Smith's believing \( p \), then we would say that Smith knew \( p \). Thus, 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.

To see that this requirement is satisfied in all cases of (empirical) knowledge, we must examine a variety of such causal connections. Clearly, only a sketch of the important kinds of cases is possible here.

Perhaps the simplest case of a causal chain connecting some fact \( p \) with someone's belief of \( p \) is that of perception. I wish to espouse a version of the causal theory of perception, in essence that defended by H. P. Grice.\(^3\) Suppose that \( S \) sees that there is a vase in front of him. How is this to be analyzed? I shall not attempt a complete analysis of this, but a necessary condition of \( S \)'s seeing that there is a vase in front of him is that there be a certain kind of causal connection between the presence of the vase and \( S \)'s seeing that a vase is present. I shall not attempt to describe this causal process in detail. Indeed, to a large extent, a description of this process must be regarded as a problem for the special sciences, not for philosophy. But a certain causal process — viz. that which standardly takes place when we say that so-and-so sees such-and-such-
must occur. That our ordinary concept of sight (i.e., knowledge acquired by sight) includes a causal requirement is shown by the fact that if the relevant causal process is absent we would withhold the assertion that so-and-so saw such-and-such. Suppose that, although a vase is directly in front of S, a [hologram] is interposed between it and S, thereby blocking it from S’s view. The photograph, however, is one of a vase (a different vase), and when it is illuminated by light waves from a laser, it looks to S exactly like a real vase. When the photograph is illuminated, S forms the belief that there is a vase in front of him. Here we would deny that S sees that there is a vase in front of him, for his view of the real vase is completely blocked, so that it has no causal role in the formation of his belief. Of course, S might know that there was a vase in front of him even if the photograph is blocking his view. Someone else, in a position to see the vase, might tell S that there is a vase in front of him. Here the presence of the vase might be a causal ancestor of S’s belief, but the causal process would not be a (purely) perceptual one. S could not be said to see that there is a vase in front of him. For this to be true, there must be a causal process, but one of a very special sort, connecting the presence of the vase with S’s belief.

[...]

I turn next to memory, i.e., knowledge that is based, in part, on memory. Remembering, like perceiving, must be regarded as a causal process. S remembers p at time t only if S’s believing p at an earlier time is a cause of his believing p at t. Of course, not every causal connection between an earlier belief and a later one is a case of remembering. As in the case of perception, however, I shall not try to describe this process in detail. This is a job mainly for the scientist. Instead, the kind of causal process in question is to be identified simply by example, by “pointing” to paradigm cases of remembering. Whenever causal processes are of that kind — whatever that kind is, precisely — they are cases of remembering.5

Knowledge can be acquired by a combination of perception and memory. At to, the fact p causes S to believe p, by perception. S’s believing p at to results, via memory, in S’s believing p at t₁. Thus, the fact p is a cause of S’s believing p at t₁, and S can be said to know p at t₁. But not all knowledge results from perception and memory alone. In particular, much knowledge is based on inference. . . . As I shall use the term ‘inference,’ to say that S knows p by “inference” does not entail that S went through an explicit, conscious process of reasoning. It is not necessary that he have “talked to himself,” saying something like “Since such-and-such is true, p must also be true.” . . . 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.

4 If a laser photograph (hologram) is illuminated by light waves, especially waves from a laser, the effect of the hologram on the viewer is exactly as if the object were being seen. It preserves three-dimensionality completely, and even gives appropriate parallax effects as the viewer moves relative to it. Cf. E. N. Leith and J. Upatnieks, ‘Photography by Laser,’ Scientific American, CCXII, 6 June 1965): 24.

5 For further defense of this kind of procedure, with attention to perception, cf. Grice, op. cit.
Suppose S perceives that there is solidified lava in various parts of the countryside. On the basis of this belief, plus various “background” beliefs about the production of lava, S concludes that a nearby mountain erupted many centuries ago. Let us assume that this is a highly warranted inductive inference, one which gives S adequate evidence for believing that the mountain did erupt many centuries ago. Assuming this proposition is true, does S know it? This depends on the nature of the causal process that induced his belief. If there is a continuous causal chain of the sort he envisages connecting the fact that the mountain erupted with his belief of this fact, then S knows it. If there is no such causal chain, however, S does not know that proposition.

Suppose that the mountain erupts, leaving lava around the countryside. The lava remains there until S perceives it and infers that the mountain erupted. Then S does know that the mountain erupted. But now suppose that, after the mountain has erupted, a man somehow removes all the lava. A century later, a different man (not knowing of the real volcano) decides to make it look as if there had been a volcano, and therefore puts lava in appropriate places. Still later, S comes across this lava and concludes that the mountain erupted centuries 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. A necessary condition of S’s knowing p is that his believing p be connected with p by a causal chain.

In the first case, where S knows p, the causal connection may be diagrammed as in Figure 1. (p) is the fact that the mountain erupted at such-and-such a time. (q) is the fact that lava is (now) present around the countryside. ‘B’ stands for a belief, the expression in parentheses indicating the proposition believed, and the subscript designating the believer. (r) is a “background” proposition, describing the ways in which lava is produced and how it solidifies. Solid arrows in the diagram represent causal connections; dotted arrows represent inferences. Notice that, in Figure 1, there is not only an arrow connecting (q) with S’s belief of (q), but also an arrow connecting (p) with (q). In the suggested variant of the lava case, the latter arrow would be missing, showing that there is no continuous causal chain connecting (p) with S’s belief of (p). Therefore, in that variant case, S could not be said to know (p).

\[ (p) \rightarrow (q) \rightarrow B_s(q) \rightarrow B_s(p) \]

\[ B_s(r) \]

Figure 1

I have said that p is causally connected to S’s belief of p, in the case diagrammed in Figure 1. This raises the question, however, of whether the inferential part of the chain is itself a causal chain. In other words, is S’s belief of q a cause of his
believing $p$? This is a question to which I shall not try to give a definitive answer here. I am inclined to say that inference is a causal process, that is, that 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 proposition. But I do not wish to rest my thesis on this claim. All I do claim is that, if a chain of inferences is “added” to a causal chain, then the entire chain is causal. In terms of our diagram, a chain consisting of solid arrows plus dotted arrows is to be considered a causal chain, though I shall not take a position on the question of whether the dotted arrows represent causal connections. Thus, in Figure 1, $p$ is a cause of $S$'s belief of $p$, whether or not we regard $S$'s belief of $q$ a cause of his belief of $p$.

So far, my examples may have suggested that, if $S$ knows $p$, the fact that $p$ is a cause of his belief of $p$. This would clearly be wrong, however. Let us grant that I can know facts about the future. Then, if we required that the known fact cause the knower’s belief, we would have to countenance “backward” causation. My analysis, however, does not face this dilemma. The analysis requires that there be a causal connection between $p$ and $S$'s belief, not necessarily that $p$ be a cause of $S$'s belief. $p$ 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. This can be illustrated as follows.

$T$ intends to go downtown on Monday. On Sunday, $T$ tells $S$ of his intention. Hearing $T$ say he will go downtown, $S$ infers that $T$ really does intend to go downtown. And from this $S$ concludes that $T$ will go downtown on Monday. Now suppose that $T$ fulfills his intention by going downtown on Monday. Can $S$ be said to know that he would go downtown? If we ever can be said to have knowledge of the future, this is a reasonable candidate for it. So let us say $S$ did know that proposition. How can my analysis account for $S$'s knowledge? $T$'s going downtown on Monday clearly cannot be a cause of $S$'s believing, on Sunday, that he would go downtown. But there is a fact that is the common cause of $T$'s going downtown and of $S$'s belief that he would go downtown, viz., $T$'s intending (on Sunday) to go downtown. This intention resulted in his going downtown and also resulted in $S$'s believing that he would go downtown. This causal connection between $S$'s belief and the fact believed allows us to say that $S$ knew that $T$ would go downtown.

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*A fact can be a cause of a belief even if it does not initiate the belief. Suppose I believe that there is a lake in a certain locale, this belief having started in a manner quite unconnected with the existence of the lake. Continuing to have the belief, I go to the locale and perceive the lake. At this juncture, the existence of the lake becomes a cause of my believing that there is a lake there. This is analogous to a table top that is supported by four legs. When a fifth leg is inserted flush beneath the table top, it too becomes a cause of the table top’s not falling. It has a causal role in the support of the table top even though, before it was inserted, the table top was adequately supported.*
The Missing Link?

Goldman seems to have diagnosed the problem with many cases of justified true belief that prevents them from being cases of knowledge: the beliefs in question are not properly causally connected with the facts they are about. Adding causation to the mix seems to fix things. Goldman thus offers this analysis of knowledge later the in the previous article:

\[
S \text{ knows that } p \text{ if and only if } \\
\text{the fact that } p \text{ is causally connected in an } \\
\text{“appropriate way with } S's \text{ believing } p. \text{ (369)}
\]

He goes on to provide a list of “appropriate knowledge-producing causal processes”, including perception, memory, or causal chains exemplifying certain patterns (e.g., that depicted in Figure 1), or combinations of these.

Two questions naturally arise here: First, does this analysis rule out the Gettier examples? Second, does it rule in all the cases of knowledge we wish to countenance? The second question seems like it might be the harder question — for we don't have an exhaustive list of every case of knowledge to test. But the first may be just as difficult. Note that it can be taken two ways: (a) does Goldman's analysis rule out as cases of knowledge all of the Gettier-inspired false-positive cases people have actually proposed? (b) does Goldman's analysis rule out as cases of knowledge all of the possible Gettier-inspired false-positive cases people might eventually think of? Clearly the second interpretation is the relevant one. For with this and other attempts at analyzing a concept such as knowledge, the issue not whether it solves some failures of the analysis, but whether it gets them all. We can exclude all of the counterexamples we know about without excluding all possible counterexamples to analysis. And only one counterexample is enough to spoil things. The depressing upshot to all of this seems to be that whereas we cannot prove that a theory is right (for passing many tests is never enough), we can prove that it is wrong (for only one counterexample is required).!

So how does Goldman do? In the case of the second question — does he avoid false negatives? — we might worry that his list of accredited routes to knowledge is too short. What about Ayer's psychic? What about intuition? Does our concept of knowledge really contain all this detail? I don't think the answers to these questions are very clear. In the case of the first question, it looks like the analysis is too weak: it’s still subject to “Gettierization”.

Questions to Think About

1. Does Goldman’s analysis avoid “false negatives”?
2. Does Goldman’s analysis avoid “false positives”? Attempt to a case that fits his analysis but is intuitively not a case of knowledge.
3. Does it matter for the conception of knowledge how Goldman fills out his account of causation?
4. How else might you attempt to solve the Gettier problem? In other words, what is the correct addition to the JTB account of knowledge?
5. How confident should we be that there is a solution to the Gettier problem — or that coming up with a good philosophical account of knowledge requires solving the Gettier problem?

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1 Things may not be quite this simple, especially in the sciences where whether some fact counts as a counterexample may depend on many other auxiliary facts which are in question.