Article

Hitting or being right

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Abstract: In this paper, we study Gettier's problem based on some recent bibliography and new research advances. First, we set the terms of the discussion and expose the core of the problem. Many disputes on this topic are rooted in misapprehensions of the concept of knowledge. Therefore, we give the most common definition of knowledge and show its structure. Then we look at Gettier's two cases and propose a new example that helps us clarify the nature of the problem. We use a case of induction because it gathers all the epistemological problems together so that its solution may be considered a complete one. Finally, incorporating recent advances in epistemology, we propose a solution to Gettier's problem. Some situations that fit in the common definition of knowledge do not seem to also fit under the word "knowledge." Through the study of a hypothetical case, in this article we shall propose a solution to this dissonance.

Keywords: epistemology; justified; true; belief; knowledge; Gettier's problem

1. Introduction

It has been quite a long time since Edmund L. Gettier's shocking article "Is Justified True Belief Knowledge?" appeared in *Analysis* and much new bibliography has since been added to the one at hand. The core problem, however, remains unsolved. A deep examination of this question may lead us to a sharp, but also bitter conclusion: The nature of the problem is neither ontological nor even epistemological, but merely linguistic. In fact, the whole argument about knowledge seems to us to be a controversy about the word "knowledge" rather than about its meaning. Let us set the terms of the discussion.

2. The problem of knowledge

2.1. Gettier's cases and literature review on them

As Gettier [1] said, the common and widely accepted definition of "knowledge" is the case in which someone (whom we shall call "*S*") knows something (which we shall call "*P*"), which, with a little more precision, is as it follows:

- (α) *P* is true
- (β) *S* believes (α)
- (γ) *S* has a sufficient reason to (β)

The fact that (γ) depends on (β) and (β) depends on (α) leads us to conclude that this is the main requirement for knowledge, so, even though the others are also quite important, everything depends on whether *P* is true or not. We will return to this point later. Now, the problem here is that many people may refuse to call "knowledge" to certain situations in which, even though the three requirements are satisfied, *S* does not know *P* by the usual epistemological or even logical ways. As Zagzebski said, this problem apparently leads us to the dilemma between either the insufficiency of the

definition of knowledge or the insufficiency of justification as a (γ) requirement for leading to knowledge [2]. The same is said by Sturgeon: According to fallibilists, "justification is not sufficient to convert belief into knowledge" [3]. These, both the insufficiency of the three requirements together or of justification alone, were for Lycan "uninteresting solutions" [4].

Gettier [1] offers us two cases of these rare occasions of knowledge. The first one [1] says that we know, for some reason, that a man whom he calls Jones will get a job and has ten coins in his pocket. Since Jones is a man, if that is true, then it is also true, more generally, that there is one man who will get a job and has ten coins in his pocket. The core of the problem is that Jones is not the man who gets the job, but the one who gets it, Smith, coincidentally also has ten coins in his pocket. It is still true that the man who gets the job has ten coins, but there is an epistemological problem: We thought this was true based on believing Jones was that man. Did we, then, really know that the man getting the job had ten coins in his pocket, if that man, Smith, was not the one that we supposed, Jones?

The second case [1] is similar. Gettier says that we know, for some reason, that Jones has a car of a certain brand. If this is true, then it is also true that Jones has that car or that another man, whom he calls Brown, is in some random city, any place for this case. This proposition is true, based on the first, because of an elementary logical disjunction. The problem is that, again, the first statement is not true, because Jones does not have any car of that brand, but it is the case that, by chance, Brown is, indeed, in that random city. In the end, it is true that Jones has that car or Brown is in that city, but the problem here lays on the fact that we thought it was true because of Jones having the car, not because of Brown being in the city, which was a random proposition logically added to the one we believed was true. The question is the same: Did we really know that Jones had a car or Brown was in the city, as long as our supposition was the exact opposite of reality?

Both Gettier's cases have something in common. In the first one, we knew that a man had some qualities (having a job and having some coins in his pocket), but we knew it based on our expectation of Jones, not Smith. We knew it, but on a bad basis. In the second, we knew that a proposition made with two other ones was true, but we knew it based on our expectation about one of those two, not about the other. We knew it, but also on a bad basis. In both cases we knew a true statement, but based on a wrong reasoning or evidence. Some say this kind of problem is logically unsolvable [5]. Looking for a solution, we might suggest our own example.

2.2. Methodology and a new case for study

Let us imagine an unknown tribe on a lost island in the ocean; we will call them the Aioue tribe. The aioues perfectly know that their people sometimes die and that this kind of incident often happens in their old age or when they are ill. They know the rules of induction, so they feel able to derive a general law for this misfortune. After many generations and a lot of deep theological reasoning, the sages of the aioues have come to the following conclusion: The telluric island god, who has given them life since ancient times, has to renew and repair the bodies of the islanders when they get too old or ill, so that at that moment the earth takes their life and, thereby, they can be

reborn as a new child of the tribe with a young and strong body for a new and long life. We may use a religious example, since, following Clarke [6], it plays well with the topic of belief. The fact is that Aioue's cosmological sequence seems to have been always fulfilled: Some old aioues die, some new aioues are born. Their reasoning, then, is:

1) The island god takes the life of old or ill aioues
2) Some aioues get old or ill
3) These old or ill aioues die

As we have said, the main requirement of knowledge is (α), i.e., the truth of *P*. If our *P* is now (3) and since (3) is empirically undeniable, then we can assume that the Aioue people satisfy the (α) requirement of knowledge. They also satisfy the (β) requirement, because they are positive about the truth of (3). How could they deny it, if their old and ill people are, in fact, dying? Finally, they are justified in their belief, i.e., they have a sufficient reason for believing (3), if their senses and reason do not deceive them about the fact of the death of their old and ill people. Therefore, the Aioue tribe also satisfies the (γ) requirement of knowledge, so we must affirm that they do indeed have knowledge.

The problem is, as we have said, that many people may refuse to call this kind of situation "knowledge": Let us imagine that the sages of the tribe predict that an old man will die and, in fact, this man eventually dies. Apparently, they have developed a correct cosmological model, but is it truly so? Did they really know that this man was going to die? Based on thousands of cases, they induced a general law, but not the right one. (Let us leave aside the bitter controversy about the general validity of induction). The aioues know that they shall eventually die, but when we analyze their reasoning we face some difficulties in calling theirs "knowledge"; at least, "true knowledge". Since they satisfy the three former requirements, we are supposed to recognize that they really know about their future death: (α) it is true that they will die; (β) they are sure about it and (γ) they are justified in believing so. However, the reason why they believe they will die has nothing to do with the real cause of human death. One of the statements in which they support their argument, namely, statement (1) is false, so the question is: Do the Aioue people have true knowledge of their future death?

As Goldman says, "a belief counts as knowledge when appeal to the truth of the belief enters prominently into the best explanation for its being held", i.e., that it "helps to explain both its content and the way it is held" [7]. The main issue, then, is to clarify whether our (α) helps to explain out (γ), which leads us to the even more important issue of clarifying what "explanation" means. Do the aioues sometimes die? Yes, indeed. Do they do so because an island god claims the souls of the old and the ill? It is not exactly like that, but it is essentially similar. In fact, they die when they get old or ill, so we could say that their strange explanation is in some sense true, although obviously not the best one. However, they do not know a better explanation, just as in the past we did not know how our solar system worked. We had a flawed explanation, but an explanation anyway, until a new paradigm, in the terms of Kuhn, emerged. The same could be said of the Aioue: They can explain human death with a theory that, as we can see, is not perfect, but works well in predicting deaths.

On the top of this question are the recent works of Bogardus and Perrin [8,9], which contain an interesting solution to Gettier's old trap. They, as explanationists, assume the theory that "knowledge requires only that beliefs bear the right sort of explanatory relation to the truth", i.e., that "knowledge is believing something because it's true" [8]. How does this fit into the case of the Aioue tribe? Bogardus and Perrin, using a different example, answer the question as follows: Firstly, "You believe the sun rises every day because you've seen it rise many times in the past. (SEEN explains BELIEVE)" [8]. In our case, many occasions of death seen in the tribe (seen) explain the sages' prediction of death (believe). Secondly, "The fact that the sun rises every day explains why you've seen it rise many times in the past. (FACT explains SEEN)" [8]. For us, the deaths that the aioues have seen (seen) are based on the actual occurrence of those deaths, which are factual (fact). Finally, "So, the fact that the sun rises every day explains why you believe that the sun rises every day. (So, FACT explains BELIEVE)" [8]. That is, the constant death of ill and old people in the tribe (fact) explains the sages' prediction (believe). The fact that people are dying explains why they see people dying and the fact that they see people dying explains why they believe people die, so the fact that people are dying explains why they believe people die. They believe they are going to die because, in fact, they are going to die. Their belief is perfectly consistent with reality. This is true knowledge.

Then, Bogardus and Perrin go a step further and do a very interesting reasoning: "If every link in this chain is required for a complete explanation, then, according to Explanationism, you know that the sun rises every day. Now, if you competently deduce that the sun will rise tomorrow from your knowledge that the sun rises every day, it will be the case that: The fact that the sun will rise tomorrow explains your belief that the sun will rise tomorrow. The known premise together with your grasp of the implication puts you in a position to appreciate the truth of the conclusion. In that case, the truth of the conclusion explains why you believe that it's true" [8].

This is certainly brilliant, because it leads us to a deeper comprehension of the problem: It is the truth of the conclusion that explains the belief. As they say even in the title of their article, knowledge is believing something because it is true. The sages of the Aioue tribe have a belief: A man who is whether old or ill shall die. They are positive about it and they have a good reason for it, because, as Bogardus and Perrin say, the truth of the conclusion explains the truth of the belief. Obviously, that belief is based on a false premise, since the island god referred to is not real, but this has nothing to do with the belief itself, which is simply that, in general, ill and old people will die and, in this case, this old and ill man will die.

2.3. Results of the research

It is not relevant, to the solution of the problem, whether the basis of the belief is true or false, just as it was not relevant in Gettier's cases. Whether Jones was the man who got the job or not was not important in the end, because, anyways, it was still true that a man with ten coins in his pocket got the job. For the same reason, it is not important why the sun rises every day in order to predict it will also rise tomorrow. It is, of course, important if we think in terms of astronomy or natural science or even just out of curiosity, but not for prediction; it only matters whether the sun rises or not.

The aioues are in the exact same case: They die for a reason which is not the one they think, but this only matters in order to increase their knowledge of medicine or theology. However, these things are not a problem for the prediction itself, which only requires one thing: The death of that man, which will satisfy the general law developed by the aioues and verify their belief. The basis of the belief loses its importance when facts come to prove its truth, even if these same facts also prove that its basis is false.

Gettier's thesis [1] was that those three requirements were not sufficient for knowledge, but we think that what he really struggled with was not the idea of considering that the two cases as really showing knowledge, but the idea of simply calling it "knowledge". This word has a moral connotation that gives it a positive value, which can be transferred to the thing signified whenever the word is used. We feel that to call "knowledge" the justified true belief of the Aioue tribe would be to accept and approve their theological reasoning. We are tempted to reject the idea that they really know, but rather believe, they will die; to say that they do not have a true or complete knowledge, but a deficient one; that, in short, they do not really have anything that deserves to be called "knowledge".

This is the true problem: Our case, like Gettier's, satisfies the three widely accepted requirements of knowledge, but we seem to have a psychic struggle with that name. The problem is not in the thing itself, but in the word: We feel more comfortable if we simply add some adjectives to the noun "knowledge", like "false" or "unsound", but knowledge in any case. It seems obvious that this is a linguistic problem and, therefore, we should look for a linguistic solution, not for an epistemological one.

We propose, as a simple solution, the distinction between two species of knowledge or even two ways of knowing: Hitting and being right. To be right means to have knowledge of a true proposition as the conclusion of a valid logical reasoning based on true epistemological evidence, while to hit means to have knowledge of a true proposition, but as the conclusion of an invalid or fallacious reasoning, or of no reasoning at all, or of a reasoning whose set of evidence contains either at least one false proposition or no true propositions. In both cases we may speak of a *P* proposition (α) which is true, (β) which we believe is true and (γ) which we have a sufficient reason to believe is true. The same goes for the aioues. They really know of their future death, but only by hit. They know they will die, but they are not right about it, because they lack the true reasons why they will die.

Let us take a second example. Suppose we say: (a) all mammals lay eggs; and (b) chickens are mammals, so, by perfect logic; (c) chickens lay eggs. Would we know that chickens lay eggs? We reckon the answer is yes, we would; we would not be right, but we would hit. The same goes for Gettier's cases. The fact that a man with ten coins has got the job explains why we have been informed that a man with ten coins in his pocket has got the job and the fact that this has been reported to us explains why we believe that a man with ten coins in his pocket has got the job; therefore, the fact explains our belief. Whether we were not well informed of the details is a separate issue: Jones or Smith, either way a man with ten coins in his pocket has now a job; this is what we believe, we believe it because we have been told so and we have been told so because it is true, so we believe it because it is true. There are interesting advances on accidental truth, such as Paulson's [10], that explain why knowledge in our example or in Gettier's is far from perfect. Nonetheless, the core here is the

conclusion and its truth, not the epistemic or logical process that led to it. The details are a matter for another discussion. In this case, we were not right, since we were thinking of another man, but we were indeed thinking of a man, so we have hit. No less interesting is Yakubu's approach to this case [11].

We may say the same thing, mutatis mutandis, about the Aioue tribe and the second Gettier case. In the latter, as we have previously said, there is a disjunction of two statements: Statement A, which is supposed to be true, and statement B, which is accidental and not relevant. The disjunction is thought true based on the truth of A. However, A turns out to be false and B, to be true. This, even though it may not seem so, is a clear case of knowledge, as explanationism teaches. Follow us in our reasoning: The fact that the disjunction is true explains why we can represent it as true and the fact that we have represented it as true explains why we believe it to be true; therefore, we believe the disjunction to be true because it is true. We clearly see that our concrete expectation was significantly different from the result, since A is not equal to B, but the point here is that we were not predicting neither A nor B, but the disjunction of both. Whether our prediction was based on one or another is not relevant insofar as the prediction ends up being true, which it is. This is the toughest case, since the disjunction used by Gettier may distract us from the true and easy solution, which is the same in every case. We shall clarify it in the discussion. It is only a hit, but a case of knowledge anyways.

2.4. Discussion

Probably, authors like Kirkham [12] would dispute this solution, since they consider it to be the core of the problem rather than a potential solution. This is because they still believe this problem is epistemological, even though we have said that, epistemologically, this issue is clear. The real core, in this case, is just the word. If we refuse to call "knowledge" the situation of, e.g., the Aioue tribe, then we will be pretending that people who assure they will die do not know they will die, which sounds difficult to defend. We should, instead, recognize they have true and genuine knowledge about their future death, which does not mean they are right about it, because they merely hit the true statement *P* by unorthodox ways.

On this point we support the explanationist theory. Most of the strongest counterarguments to this position are explained and refuted in Bogardus and Perrin's recent article [9]. We shall not reproduce here the entire controversy, but only its highlights.

The first interesting collision they deal with is about the need for belief to be factually grounded, as Piccinini puts it [13]. In contrast, Bogardus and Perrin explain that "knowledge does not require factually grounded belief" [9], as is the case, for example, with "important propositions of mathematics, logic, morality, and the like" [9]. Piccinini [13] uses, in fact, an example which seems essentially identical to ours about chickens and eggs. He proposes a case in which two miscomprehensions are chained and, coincidentally, they compensate each other so that, in the end, the correct conclusion is reached. Bogardus and Perrin sharply respond that "if that is the case, then receiving testimony in this way would in fact be a reliable guide to the truth" [9], and it is so because of the already pointed major principle of explanationism:

Knowledge is believing something because it is true. The path to that truth is, if we think carefully about it, the subject of another debate. Back to our chicken example, the belief that chickens lay eggs is justified by the fact that chickens lay eggs, i.e., by the truth of the conclusion. The previous reasoning premises about chickens being mammals and mammals having the universal ability to lay eggs are, in themselves, two different beliefs that would only be true if chickens were actually mammals or if mammals actually laid eggs, which is not the case. We could engage in a metaargument about the truth of these premises, considered themselves as conclusions, but that would be completely independent of the main argument. So, based on explanationism, we can say that the conclusion and the reasoning or path to the conclusion constitute two different beliefs that must find their own truth in two independent facts. In this way, the factual grounding counterargument is refuted.

Second, Bogardus and Perrin [9] face Mortini's modalist objections [14]. He suggests that knowledge depends on whether or not the proposition could be known by the same method in other close possible worlds. The same has been recently studied, e.g., by Paulson [15]. In their former article, Bogardus and Perrin concluded that it was possible to "tease apart knowledge from sensitivity and safety" and that "the connection between a believer and the truth can't be fully captured in modal terms, because it's an explanatory connection" [8]. Against this, Mortini, based on two counterexamples, formulates a renewed and strengthened safety condition [14]. Then, he argues that, even though "explanationism does generally better than virtually any version of modalism [in] the case of knowledge of necessary truths which, as such, are true in every nearby world and thus trivially safe" [14], it is still the case that "when it comes to the Gettier-style cases considered here, my [Mortini's] modalist condition easily delivers the intuitively correct verdicts, while Bogardus and Perrin's explanationist analysis clearly does not" [14]. Nevertheless, this is clearly disputed by Bogardus and Perrin. They see that Mortini's argumentation entirely relies on his renewed safety condition, whose reference to the "same environment" makes all the difference to the old and already surpassed safety conditions of modalism. The point here is that this new feature of the condition eliminates some problems, but not all of them and, especially, not an important one, as Bogardus and Perrin sharply point out: This renewed safety condition only grants safety in cases of environmental change, but not in the very important cases where the risk comes from the method applied in the same environment [9].

In our opinion, based on Bogardus and Perrin's, modalism's faith in safety does not explain better than explanationism's reliance in truth cases like the Aioue's, where the core issue is not the possibility of different conclusions in also different possible worlds [15], but the fact of whether the conclusion is whether true or false in this world or, ceteris paribus, in any other, i.e., also given the eventual fact of the old and ill aioues' death. It is not important if, e.g., in a close possible world the Aioue's island god truly exists, which seems to be the greatest and most important environmental change we can imagine for this case. It is not important because in both worlds we shall have old and ill aioues dying, with or without that god, and the key still is if the sages' death predictions are true or false. These are not based just on luck [15], but on a real, positive and certain predictable fact. We can even ignore the safety condition, because it has nothing to do with the real problem: Do the aioues have true knowledge,

even based on false premises? Yes, because what supports their belief is, in this world and in any other, the fact that their conclusion is true and not the modal safety of their method of inquiry. It seems that modalism fails to refute the explanationist approach in this case.

Finally, Bogardus and Perrin reject Boyce and Moon's objection [16], which is essentially the same as to the previous ones. In short, they respond that incidental circumstances do not affect the core of the problem, so it does not matter if, as in Boyce and Moon's counterexample, close to a fake holographic vase is, hidden, a real vase, so that the subject has a vase in front of him anyway, thus verifying his belief. Bogardus and Perrin say that his belief would be verified even without that incidental circumstance, since the true conclusion is just that a vase exists and this, indeed, is true. Therefore, the existence of the vase explains why it can be holographically projected and this projection explains why we believe that a vase exists, so the existence of the vase explains why we believe it exists. In our terms, if we predict that this ill or old aioue will die by the will of his god and that this mammal chicken is going to lay an egg like every mammal does, then when the aioue finally dies and the chicken lays the egg our prediction is verified, because it was not the cause, but the consequence what we wanted to predict. The same thing happens with the vase: It does not matter whether the vase we see is holographic or real, since what we conclude is that there is a vase and, indeed, there is a vase, either in front of our eyes or hidden and holographically projected. As we have said, this is a matter for another debate about the truth of our reasoning, itself considered as conclusion of its own metaargument, but it has nothing to do with the truth of the conclusion of our main argument. This objection seems refuted to us, too.

There are also some good solutions to Gettier's problem, such as, e.g., Hetherington's [17] sharp absolute negation of the problem. It is quite interesting: He laments the epistemologists' methodological oversight of the factual clues given by Gettier, which Hetherington claims to be the key to solving the two non-problems [17]. Of particular relevance to us is what he says about luck: "It is possible to be in a Gettier situation, along with that luck, even while knowing" [17]. The exact opposite is said, from the perspective of infallibilism, by Climenhaga: Since "infallibilism completely eliminates the relevant kind of luck" and since "If it is certain for you that *P*, it is not at all lucky that your belief turns out to be true", he concludes that "Subjects in Gettier cases do not have knowledge" [18]. We think, after some reflection, that behind this opinion there may be an overstatement of the concept of evidence [18,19], a second overstatement of the capacity of luck to interfere with knowledge [20] and, perhaps, a misconception of both. Hetherington keenly challenges this kind of view, suggesting that it is "potentially a way of having knowledge—albeit an unusual way, perhaps a lucky way" [17], but ultimately a way to knowledge. This is, in short, what we have been saying relentlessly in the preceding pages. Nevertheless, Hetherington's solution essentially points to what explanationism also achieves with greater ease and clarity.

We think that explanationism, as developed by Bogardus and Perrin, is the best way to solve the Gettier problem, but it is not yet complete because it lacks the useful distinction we proposed earlier. We accept as cases of knowledge those in which every epistemic step fails and yet we arrive at a true conclusion; we may say that we accept, then, explanationism. However, the explanationist model could be enriched if it

included the distinction between the two species of knowledge or, even better, the two species of knowing: hitting and being right. We may know by hit that an old aioue shall die, or that a chicken shall lay an egg, or, using the counterexamples as our own examples, that a vase exists, but we must recognize it as knowledge anyway, because there is no better alternative. Even though this may seem an unsound approach, we must first say that any alternative would be far worse, as decades of discussion have taught us. Nonetheless, in the second and most important place, it is not even the case, since the counterarguments have been refuted and the affirmation of true knowledge in these epistemologically difficult cases is undeniable.

We think that the epistemological debate is settled, so, as a prophylactic measure to avoid the linguistic debate, it is time to close the way for nominalist complaints. Probably, the fears of authors like Piccinini, Mortini, Boyce or Moon are based on a narrow concept of knowledge. As Hetherington puts it, "normal thinking is too conceptually limited. We have found the potential for Gettier situations to reveal not all knowledge to be like that. Correlatively, we will continue misinterpreting such situations until we discard that needlessly restrictive conception of knowledge. We should be open to the possibility of knowledge—even knowledge of everyday truths (such as about who will get a job or about someone's seeing a barn)—arising in odd ways" [17]. By broadening the concept of knowledge, we may be able to improve our understanding of the problem and, thus, perhaps finally reach the exit of Gettier's labyrinth.

3. Conclusion

Knowledge by being right is the ordinary situation that everyone is willing to call "knowledge", while knowledge by hit is the problematic and controversial situation that no one wants to call "knowledge" because no one would like to validate it with such a noble word. Nevertheless, it has been widely proved that it is the truth and not the path to it that justifies the belief, i.e., what causes true knowledge. Therefore, we should not allow language to betray our reason. Instead, we must master language and use it for a better understanding of this phenomenon. If there are two different paths to knowledge, the right one and the not-so-right one, then there should also be two different ways to say "knowledge". We may not be right, but surely we hit.

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