KNOWLEDGE IS NOT FACTUALLY GROUNDED BELIEF

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ABSTRACT: Gualtiero Piccinini has recently proposed an interesting new solution to the Gettier Problem: Knowledge is factually grounded belief. But there is a problem with this purported solution: It is both too strong and too weak. In this paper, I provide two counterexamples to substantiate the claim that it is both too strong and too weak. Thus, the view that knowledge is factually grounded belief is inadequate as an account of knowledge.

KEYWORDS: knowledge, grounds, truthmaker, Gettier problem

1. Introduction

In a recent paper, Gualtiero Piccinini (2022, 410) cleverly argues for the thoughtprovoking view that S knows that p iff S has a belief that p that is grounded in the fact that p (hereafter, FGB)—i.e., S's belief that p is factually grounded. According to Piccinini (2022, 405), a belief that p is grounded in the fact p iff that belief is grounded in its truthmaker, where the truthmaker for the belief that p is the fact that makes the belief that p true.

What is it, though, for a belief to be grounded in its truthmaker? By Piccinini's (2022, 408) lights, a belief being grounded in its truthmaker "is an epistemic tie between a belief and its truthmaker" that "is determined by facts that affect the probability that a belief is true, including processes that collect, transmit, and process information." More specifically, when the grounding facts "raise the objective probability that the belief that p is true and they raise such a probability high enough to satisfy the epistemic standards that apply in a given context", then the belief that p is fully factually grounded (Piccinini 2022, 408), where practical stakes can affect the epistemic standards at issue according to Piccinini (2022, 412). Such grounding facts include evidence but they are "not limited to evidence: in addition to evidence," they include "any other factors that collectively tie the belief to its truthmaker in accordance with the epistemic standards that apply in that situation" (Piccinini 2022, 410). According to Piccinini (2022, 408, 410), though, for a belief that p to be factually grounded also requires (or, at least, may require) that the subject have sufficiently good evidence for p such that the subjective probability that p is high enough (i.e., the subject's belief that p is grounded *simpliciter*). If both the objective

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and subjective components are satisfied, then, according to Piccinini (2022, 410), S's belief that p is uncontroversially factually grounded, and so is an instance of knowledge.

Piccinini (2022, 406) claims that a major attraction of FGB is that it implies that Gettier beliefs are not instances of knowledge because they "are not grounded in their truthmaker". For example, in Gettier's (1963) famous job/coins case, Smith's belief that someone who gets the job has ten coins in his pocket is not grounded in the fact that makes the belief true—it is not Jones who gets the job, but Smith and it just so happens that Smith has ten coins in his pocket. According to Piccinini (2022, 405-06, 414), FGB solves the Gettier Problem.

2. FGB is Too Strong and Too Weak

However, FGB, while attractive in certain respects, has a very serious problem: It is both too strong (if it is to be a genuine solution to the Gettier Problem) and too weak. To demonstrate that it is both too strong and too weak, I provide two counterexamples. The first counterexample shows that FGB is too strong (if FGB is to be a genuine solution to the Gettier Problem) and the second shows that it is too weak—the second counterexample also shows that, *contra* Piccinini, FGB might not handle the Gettier Problem after all. Let us turn to the promised counterexamples now.

Consider the following example adapted from Ted Warfield (2005, 407-08):

Handout. Counting with some care the number of people present at her talk, Laura reasons: 'There are 53 people at my talk; therefore my 100 handouts are sufficient'. Laura's premise, however, is false. There are, in fact, 52 people in attendance at her talk—she blamelessly double counted one person who secretively changed seats during the count.

In Handout, it is very obvious that Laura knows that her 100 handouts are sufficient. FGB, though, implies that Laura does not know that her 100 handouts are sufficient, since Laura's belief is not grounded in its truthmaker. Clearly, what makes Laura's belief that her 100 handouts are sufficient true is that there are 52 people in attendance at her talk, but Laura's belief is grounded in there being 53 people in attendance at her talk, which obviously does not make her belief true. While Laura's belief that her 100 handouts are sufficient has a lot of things going for it epistemically in Handout, it is the case that it is not grounded in the fact that makes it true inasmuch as Smith's belief that someone who gets the job has ten coins in his pocket is not grounded in the fact that makes it true in Gettier's (1963) famous job/coins case. Now, a defender of FGB might think that the relevant truthmaker in Handout is that there are approximately 50 people at Laura's talk (or that there are less than 100 people at Laura's talk, or some such fact). Let's call such a truthmaker T. Laura's belief that her 100 handouts are sufficient appears to be grounded in such a fact as T, and so, perhaps, Laura knows that her 100 handouts are sufficient after all.

Notice, however, that Handout need not be described in the way imagined above. Let the truthmaker in Handout not be T, but that there are 52 people in attendance. Handout, so described, is clearly a possible case, so Handout, so described, appears to militate against FGB.

In fact, interpreting Handout in such a way that the fact that there are 52 people in attendance is not the relevant truthmaker seems problematically ad hoc to me. Why think such a counterintuitive thing except to get FGB to avoid the bad result in Handout? After all, we would not think that the relevant truthmaker for the proposition 50 is less than 100 is the fact that approximately 50 is less than 100.

Moreover, while it is true that if Laura's target belief in Handout is grounded in such a fact as T, then it appears to be an instance of knowledge according to FGB, that is also true of subjects in a number of Gettier cases. For example, if one were to describe Gettier's job/coins case in such a way that the relevant truthmaker is not Smith gets the job and has ten coins in his pocket, but that an identifiable person at Smith's company who has ten coins in his pocket gets the job, then Smith's belief that someone who gets the job has ten coins in his pocket is grounded in such a fact, and so is, by parity of reasoning, an instance of knowledge according to FGB. But that is the intuitively incorrect result.

So, if FGB is to be a genuine solution to the Gettier Problem, then a defender of FGB is not going to be in a position to resolve the problem posed by Handout by appealing to different but closeby truthmakers like T.

Now, a defender of FGB might think that Laura's target belief is grounded in the truthmaker that there 52 people in attendance, since Laura has very good reason to believe that her 100 handouts are sufficient in Handout, and, given all of the grounding facts in Handout, the objective probability that Laura's 100 handouts are sufficient is adequately high.

But, of course, if, by the above reasoning, Laura's belief that her 100 handouts are sufficient is grounded in its truthmaker, then, by parity of reasoning, Smith's belief that someone who gets the job has ten coins in his pocket is also grounded in its truthmaker. Since not only are the practical stakes lower in job/coins than in Handout (after all, if Laura gets it wrong, it could be seen as unprofessional and embarrassing for her, whereas if Smith gets it wrong, it matters very little), but Smith also has excellent reason for believing that someone who gets the job has ten coins

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in his pocket and, given all of the grounding facts in job/coins, the objective probability that someone who gets the job has ten coins in his pocket is very high. So, if, by the above reasoning, FGB yields the intuitively correct verdict in Handout, then FGB loses its desired result in Gettier's job/coins case.

Thus, as far as I can tell, if FGB is to be a genuine solution to the Gettier Problem, then it is too strong.

Consider now the following example that shows that FGB is too weak:

Last Theorem. Suppose Eddie is an undergraduate student at Cornell University in 1940 majoring in history. He comes to believe, truly, that no three positive integers a, b, and c satisfy the equation $a^n + b^n = c^n$ for any integer value of n greater than 2 (aka Fermat's Last Theorem). Eddie comes to believe this on the basis of reading it listed as a theorem in his number theory textbook, which Eddie knows to be a highly accurate and authoritative textbook. Since Fermat's Last Theorem was not proven until 1994 and Eddie is reading the textbook in 1940, this must have been a mistake of some sort by the authors or editors. Indeed, it was—the only mistake that the authors made in the entire textbook. The textbook authors accidentally included it under the heading 'theorems' instead of 'conjectures.' An easy mistake to make, given that the theorem at issue has historically been called 'Fermat's Last Theorem,' and a mistake that proved accurate, since Fermat's Last Theorem is, indeed, a theorem of number theory.¹

Intuitively, in Last Theorem, Eddie does not know that Fermat's Last Theorem is true. After all, Fermat's Last Theorem was unproven in 1940, and so it would have been inappropriate to think of it as a theorem then, and it was listed as a theorem in his university textbook by mistake—it ought to have been listed as a conjecture, since it was not yet proven. Plausibly, Eddie cannot come to know that Fermat's Last Theorem is true by way of a mistake like this, especially when Fermat's Last Theorem remains unproven at the time that Eddie comes to believe that it is a theorem of number theory.

Think of it this way. Last Theorem is a kind of Gettier case. It has all the necessary elements, and the double-luck structure that is unique to Gettier cases: A bit of bad luck (Fermat's Last Theorem is listed as a theorem by mistake) is canceled out by a bit of good luck (Fermat's Last Theorem really is a theorem). Last Theorem is unusual as a Gettier case in what seems to me to be an inessential way: Its target proposition is necessarily true.

Now, if subjects do not know in the usual Gettier cases, as Piccinini agrees (as do most epistemologists) that they do not, then, by parity of reasoning, Eddie does not know in Last Theorem.

¹ This example, and some of the subsequent discussion involving the example, also appear in Simpson (2025), but the dialectical context in this paper is importantly different.

FGB, however, implies that Eddies does know that Fermat's Last Theorem is true. To see this, first consider that the practical stakes are quite low in Last Theorem, so the practical stakes should not affect the epistemic standard at issue very much at all. Further, Eddie has excellent reason to believe that Fermat's Last Theorem is true. Reading a mathematical fact listed as a theorem in an undergraduate mathematics textbook used at Cornell is a perfectly reliable method of belief-formation about mathematics. Indeed, Eddie arrives at his true belief by reading and understanding what he knows to be an authoritative textbook on the matter. We believe justifiably, and come to know, many mathematical and logical theorems in precisely this sort of way. So, in Piccinini's (2022, 408, 410, 412) terms, the subjective probability of Eddie's belief is high (i.e., Eddie has excellent justification for his belief that Fermat's Last Theorem is true), and so Eddie's belief is, what Piccinini (2022, 408) calls, grounded *simpliciter*. Eddie is clearly justified in believing that Fermat's Last Theorem is true.

More importantly than that with respect to FGB, though, is that the objective probability of Eddie's belief is 1, so Eddie's belief is, what Piccinini (2022, 408) calls, fully factually grounded. To see this, observe that when A logically entails B, then P(B|A) = 1, and any evidence set or set of grounding facts logically entails Fermat's Last Theorem, since Fermat's Last Theorem is a logical truth. So, the probability that Fermat's Last Theorem is true, given Eddie's grounding facts, is 1, which is the highest probability assignment that it could get in *any* context.

Thus, Eddie's belief that no three positive integers a, b, and c satisfy the equation $a^n + b^n = c^n$ for any integer value of n greater than 2 is both grounded *simpliciter* and it is fully factually grounded, and so Eddie's belief is, according to FGB, grounded in its truthmaker or factually grounded. Hence, FGB implies that Eddie knows that Fermat's Last Theorem is true. That, however, is clearly the wrong result. Therefore, FGB is too weak. Further, if Last Theorem is, indeed, a kind of Gettier case, then FGB does not appear to completely resolve the Gettier Problem either.

3. Conclusion

Let us take stock. I have shown that FGB, while an interesting view that is skillfully argued for by Piccinini, is both too strong (if FGB is to be a genuine solution to the Gettier Problem) and too weak. Therefore, FGB is inadequate as an account of knowledge.

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