

Curiosity was framed*

Dennis Whitcomb

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Abstract. This paper explores the nature of curiosity from an epistemological point of view. First it motivates this exploration by explaining why epistemologists do and should care about what curiosity is. Then it surveys the relevant literature and develops a particular approach.

0. Preamble

This paper explores the nature of curiosity from an epistemological point of view. First let me explain why epistemologists do and should care about what curiosity is. There is a literature, quickly growing today but traceable through Chisholm to James and further, on “the epistemic goal”.¹ In a standard passage from this literature, Bonjour writes that

The distinguishing characteristic of epistemic justification is...its essential or internal relation to the cognitive goal of truth...²

This focus on truth is widespread.³ Yet the epistemic goal cannot be truth alone, or even justification or rationality or knowledge or certainty alone. For, as DePaul puts it,

Take...a well-established empirical theory, a theory you believe that we know. Throw in all the evidence on the basis of which we accept that theory...compare this set of beliefs with an equal number of beliefs about relatively simple arithmetic sums and about assorted elements of one’s current stream of consciousness...the first set of beliefs is better, epistemically better, than the second.⁴

Whatever makes for the epistemic difference (or if you prefer, the *intellectual* difference) between these beliefs, call it “significance”. Several philosophers think beliefs can be significant in virtue of satisfying curiosity.⁵ One way to deepen these thoughts is to inquire into what curiosity is. Such an inquiry would also deepen *another* set of thoughts, this one on, not the relative values of some items of knowledge and true belief over others, but the values of knowledge and true belief *per se*.⁶ There are cottage industries on the latter issue, and in those industries it is sometimes claimed that knowledge and true belief *per se* are valuable because they satisfy curiosity.⁷

None of these appeals to curiosity are obviously misguided, and they have all been made by writers of justly broad influence. Hence they may well be right and, if they are wrong, we stand to learn something by deepening them enough to see why. That is why epistemologists do and should care about what curiosity is. Yet there is little extant work on the matter. This paper surveys that work and develops a particular approach.

1. Extant work

Philosophers who appeal to curiosity typically only make side remarks about its nature. Rarely do they give substantive arguments on the matter. Before discussing those arguments let’s survey

* *Ignorance* killed the cat.

some of the side remarks. Zagzebski says in passing that curiosity is a desire, and that it is a blend of thought and feeling, and that it is neither pleasant nor painful. But she does not say what it is a desire for, or what sorts of thoughts and feelings it is a blend of.⁸ Foley gives a bit more detail. He claims that “the vast majority of us are intrinsically curious about the world; we intrinsically want to have true beliefs”.⁹ Goldman makes the similar claim that “we seem to value true belief intrinsically insofar as we are spontaneously curious creatures, for curiosity is an interest in finding (and believing) truths.”¹⁰ Williamson claims something different: that curiosity is a desire to *know*.¹¹ So Foley and Goldman view curiosity as a desire for true belief, but Williamson views it as a desire for knowledge. They don’t argue for these views. The only arguments I know of about the nature of curiosity are Kvanvig’s, which start with this:

... we need to describe the goal of inquiry so that it is applicable across the entire range of cognitive beings. My concern here is with attributing complex intentional states to small children and nonhuman animals that lack the conceptual resources to be accurately characterized by those states and yet display curiosity and engage in inquiry. Given this concern, the concept of truth has advantages over those of knowledge, for knowledge is a more complex concept than truth....Still,...curiosity can be displayed and...one can engage in inquiry even absent the concept of truth....The aim of such inquiry, from within the intentional states of the cognizer, is not to find the claims that are true, for such a characterization requires possession of the concept of truth by the cognizer.¹²

This passage has many points worth engaging. But its central argument seems to be: you can be curious while lacking the concepts **know** and **truly believe**, therefore curiosity is neither a desire for knowledge nor a desire for true belief. Call this the “conceptual deficiency argument”. I’ll critique it later in the paper. In its wake Kvanvig offers up a new view of curiosity. He writes:

From the perspective of the cognizer with respect to a particular proposition *p*, the goal in question is to ascertain whether *p* or *not-p*, not to ascertain whether or not *p* is true.¹³

The view here is that curiosity is a desire “to ascertain whether *p* or not *p*”.¹⁴ But what is it to ascertain whether *p* or not-*p*? Is to come to know *p*, if *p*, and to know not-*p*, if not *p*? Or is it to come to believe *p*, if *p*, and to believe not-*p*, if not-*p*? Or is it something else? Even if we leave these questions aside, a critical worry remains: the conceptual deficiency argument that is supposed to motivate the view actually works against it. If you can be curious while lacking the concepts **know** and **truly believe**, then you can be curious while lacking the concept **ascertain**. And if these possibilities show that curiosity fails to be a desire for knowledge or true belief, they also show that it fails to be a desire to ascertain.

But in any case, it is only “from the perspective of the cognizer” that Kvanvig views curiosity as a desire to ascertain:

...even if a first-person perspective does not favor the view that the goal of inquiry is knowledge, it may be that a third-person perspective is more favorable to that view....If we approach the question this way, it is difficult to see how the concept of knowledge is going to play a role...A more plausible account...appeals to the concept of perceived truth. On this account...curiosity and the goal of inquiry are characterized in terms of finding that which is perceived to be true,...not in terms of coming to know...For the satiation of the appetite in question occurs when a perception or conviction of truth arises, and such conviction sometimes will constitute knowledge and sometimes will not. One way to think about this...is to ask...what conceptual resources a mature science would need to describe inquiry and curiosity in as nearly a lawlike way as the phenomena permit. Is there any reason to suppose that such a mature science would appeal to the concept of knowledge? I think not.¹⁵

So Kvanvig's full view is something like the following. Curiosity can be characterized either from the inside or from the outside. From the inside we should characterize it as desire to ascertain whether p or not p , because this steers us clear of the conceptual deficiency argument. From the outside we should characterize it as a desire for perceived truth, because that is what mature sciences of inquiry would do, and because curiosity is in fact sated when and only when perceived truth arises. As I just argued, the reasons on offer for the inside-characterizations are not persuasive; they actually work against the view. Now I'll argue that the reasons on offer for the outside-characterizations aren't persuasive either.

For one thing, there is recent work in cognitive psychology and cognitive anthropology that, in fact, describes inquiry in terms of whether it reaches the *truth*.¹⁶ This work may develop into mature sciences; hence it is not obvious that mature sciences would characterize curiosity as a desire for *perceived* truth. Nor is it obvious that curiosity is in fact sated when and only when perceived truth arises. For consider hunger. Is your hunger sated whenever you have a perception of being nourished? No, it is not. If you take a pill that manipulates your nervous system so as to give you a perception of being nourished, you merely *seem* to sate your hunger. To sate hunger is to get what hunger is a desire for, not to *seem* to get what hunger is a desire for. The pill may bring about the latter state, but it does not bring about the former.¹⁷

Perhaps curiosity is like hunger. Hunger is not always sated when you perceive being nourished; perhaps curiosity is not always sated when you perceive believing the truth. Perhaps perceived truth (or even perceived *knowledge*) stands to curiosity as perceived nourishment stands to hunger. I think some such view is true, and later I will argue as much. Here I just point out that we've seen no arguments against such a view, and that this fact undercuts Kvanvig's reasons for viewing curiosity "from the outside" as a desire for perceived truth.

In sum, we should not be persuaded to adopt Kvanvig's view. Before moving on I should address a further argument he makes. This one tries to diffuse one of the attractions of knowledge theories. It is infelicitous to say "I know p but I'm curious about whether p ". The view that knowledge satisfies curiosity is attractive on the grounds that it explains why this is so. Kvanvig tries to diffuse this attraction by saying that "subjective justification"- which he takes to be some sort of reflectively accessible nonfactive positive epistemic status - also satisfies curiosity.¹⁸

But why should we think subjective justification *satisfies* curiosity? On an alternative view, subjectively justified beliefs are like what hungry people get after popping the pill. On this view, subjective justification does not satisfy curiosity any more than subjective nourishment satisfies hunger. Reasons to hold such a view, then, are reasons to reject Kvanvig's explanation of the foregoing infelicities. In the latter half of the paper I'll offer up some of those reasons. But first, we should get straight on the conceptual deficiency argument.

2. Semantics

That argument assumes (correctly I think) that you can be curious while lacking the concepts **know** and **truly believe**. From this it concludes curiosity fails to be a desire for knowledge or true belief. But that conclusion comes in several senses, and the argument establishes it in only one of them. Let me explain.

When Aristotle was thirsty he desired H_2O while lacking the concept **H_2O** . This might seem puzzling. But the puzzle dissolves (or at least begins to) on some standard views about desires, namely that they have content and that their contents are propositions. On these views we can take Aristotle's thirst to amount to a desire the content of which was a proposition involving, not the concept **H_2O** , but some other coextensional concept. His thirst might, for example, have amounted to a desire that he drink water and not that he drink H_2O .¹⁹ So even though thirst is a desire for H_2O , you can still be thirsty while lacking the concept **H_2O** . Perhaps, in the same way, curiosity is a desire for knowledge or true belief, and you can still be curious while lacking the concepts **knowledge** and **true belief**. Some machinery should help clarify this point.

Let's say "you desire Φ *de dicto*" iff you desire Φ under the concept **Φ** , thereby having a desire the content of which is a proposition involving the concept **Φ** . And let's say "you desire Φ *de re*" iff you desire Φ under some concept or other, thereby having a desire the content of which is a proposition involving some concept or other of Φ . With these definitions of "you desire Φ *de dicto*" and "you desire Φ *de re*", we can say what it is for a type of desire to be *de dicto* or *de re*.

Let "X" range over types of desire – curiosity, thirst, hunger, lust, and so on. We'll say "X is a *de dicto* desire for Φ " iff: you have X iff you desire Φ *de dicto*. Similarly, we'll say "X is a *de re* desire for Φ " iff: you have X iff you desire Φ *de re*. The basic idea here is that *de re* desires subsume their objects sometimes under one concept and sometimes under another, whereas *de dicto* desires subsume their objects always under the same concept.

Now, to show that curiosity fails to be a *de dicto* desire for knowledge or true belief, it is sufficient to show that you can be curious while lacking the concepts **knowledge** and **true belief**. The conceptual deficiency argument does this. And repeated applications of it with further concepts, e.g. the concept **justified belief**, do more. They show that for every concept **Φ** that you can be curious without, curiosity is not a *de dicto* desire for Φ . Depending on what concepts you can be curious without, these applications may show quite a lot.

They do *not* show that curiosity fails to be a *de re* desire for knowledge, true belief, or anything else. For all they show, curiosity might be like thirst. Just as thirst is a *de re* desire for H_2O , a desire Aristotle had while lacking the concept **H_2O** , curiosity might be a *de re* desire for e.g. knowledge, a desire you might have while lacking the concept **knowledge**. This sort of view would make it irrelevant *how* curious people conceive of curiosity's satisfier, so long as they conceive of it. It would thus shift our theories away from concepts of that satisfier, and to that satisfier itself.

But I don't think this sort of view will work. For it is plausible that you can be curious without having *any* concepts of curiosity's satisfier. This is plausible, not because of Kvanvig's conceptual deficiency argument, but rather because it just seems true of each putative curiosity satisfier we have considered so far. These putative satisfiers are knowledge, true belief, ascertaining, and justified belief. For each of these states, you can be curious without having any concepts of it. Small children and animals probably *do* for each of these states get curious without having any concepts of it. And even if they don't, it is hard to see how they *couldn't*.

Inductively generalizing from these so-far-considered putative curiosity satisfiers, we can conclude that for *every* putative curiosity satisfier, you can be curious without having any concepts of it. And among these putative satisfiers is curiosity's actual satisfier. Thus you can be curious without having any concepts of curiosity's satisfier. But if curiosity is a *de re* desire, then curiosity requires having some concept or other of its satisfier. Hence curiosity is not a *de re* desire. And for the same reasons, it is not a *de dicto* desire either.

What is it then? We're at a dead end. I think we can find our way back to an open path by reconsidering Kvanvig's theory. What is right about that theory is its focus on questions.²⁰ I want to develop a version of that focus on which, just as the contents of belief are propositions, the contents of curiosity are questions. Let me explain.

On standard views, the contents of desires are propositions involving concepts of their satisfiers. For example, the desire *thirst* always has as its content a proposition of the form that you drink water. Coextensional concepts could replace **water**, but some such concept would remain in any case of thirst. If these standard views apply to curiosity too, then it too has as its content propositions involving concepts of its satisfier. For instance, if knowledge is the satisfier, the proposition might in some cases be that you know whether it is raining. Coextensional concepts could replace **know**, but – here is the important point – *some* such concept would remain in any case of curiosity, if the standard views about desires apply to curiosity as well as thirst.

So the views (a) that the contents of desires are propositions involving concepts of their satisfiers, and (b) that curiosity is a desire, jointly entail that you can be curious only if you conceive of curiosity's satisfier. But in fact you can be curious *without* conceiving of curiosity's satisfier. Thus we should reject (a) or (b) or both. Now, curiosity is motivational; sometimes we read or listen *because we are curious*. It is also satisfiable; it gets satisfied in the same way thirst gets satisfied, namely by your getting what it is a desire for. Hence we should keep the view that curiosity is a desire. Hence we should drop the view that the contents of desires are propositions involving concepts of their satisfiers. That view is not generally true. It may be true of some desires, but it is not true of curiosity. The contents of curiosity are *questions*.

This view does *not* suggest that curiosity requires you to conceive of its satisfier. A better position, on this view, is that curiosity requires you to conceive only of everything your questions are about.²¹ And your questions need not be about curiosity's satisfier. Thus, if the contents of curiosity are questions, then lacking concepts of curiosity's satisfier does not render you incapable of being curious. It only renders you incapable of being curious *about that satisfier*.

I submit that this is an independently plausible claim about the extent to which those who lack concepts of curiosity's satisfier are restricted from being curious. By having this independently plausible claim as an upshot, the view that the contents of curiosity are questions gets conceptual deficiency right. The fact that it does as much is an argument in its favor.

Here's another argument in its favor. Just as we manifest belief by asserting, we manifest curiosity by asking. When we manifest belief by asserting, we assert the content of the belief. Parity thus suggests that when we manifest curiosity by asking, we ask the content of the curiosity. And we ask *questions*: just as propositions are what is said, questions are what is asked. But then, the contents of curiosity are questions.

So we've seen two arguments for the view that the contents of curiosity are questions. First, the view gets conceptual deficiency right. Second, the view is suggested by parallels between believing and asserting on the one hand, and being curious and asking on the other.

You might object that questions *are* propositions. But in fact they aren't. Questions have answers not truth values but propositions have truth values not answers. And questions can be asked but not believed or asserted, whereas propositions can be believed and asserted but not asked.

Another objection points out things that are closely related to curiosity but not obviously closely related to questions. For example, you can be curious about objects like chairs and domains like the mental. Also, you can be a *curious person*, a person having curiosity as a character trait, a trait of the sort often identified with the "epistemic virtues".²² How does all this relate to questions?

Well, first of all, notice that you can have *beliefs* about objects and domains, but the contents of those beliefs are propositions nonetheless. Similarly with curiosity: you can be curious about objects and domains, but the contents of those curiosities are questions nonetheless. To be curious about an object or domain X is to have questions about it, for instance "What color is X" or "What is the nature of X?". So the view that the contents of curiosity are questions sits well with curiosity about objects and domains. It also sits well with curious people. These are just people who are in some character-constitutive way disposed to be curious. And to be curious is to have a certain sort of desire the contents of which are questions.²³ So neither curious people, nor curiosity about objects and domains, are objectionably unrelated to questions.

I conclude that curiosity is a desire the contents of which are questions. But what satisfies this desire? I'll now argue for an answer: *knowledge*.

3. Satisfaction

Curiosity is a desire for knowledge, *not* in that its contents always involve some concept of knowledge, *but instead* in that it comes to be satisfied iff you come to know the answer to the question that is its content. Curiosity is thus satisfied by knowledge alone, in the same way hunger is satisfied by nourishment alone. In each case there is a state and a desire, such that the desire comes to be satisfied iff you come to be in the state. When states are in this way related to desires, I'll call those states the "unique satisfiers" of those desires. Nourishment is the unique satisfier of hunger, and knowledge is the unique satisfier of curiosity.

If we take the arguments I've made so far, and combine them with the claim that knowledge is the unique satisfier of curiosity, we get a three-part theory:

1. Curiosity is a desire.
2. The contents of curiosity are questions. (In this sense, curiosity stands to questions as belief stands to propositions.)
3. The unique satisfier of curiosity is knowledge. (In this sense, curiosity stands to knowledge as hunger stands to nourishment.)

In slogan form: curiosity is a desire at questions for knowledge. This is my view. So far I have only argued for the first two clauses. We should believe the *third* clause because it explains why certain sorts of utterances are bad, why certain sorts of inquiry are bad, and why some facts about scientific practice obtain. Let's take these data in turn.²⁴

Utterances like "I know that p , but I'm curious: is p the case?" go awry. Why is that? Here's why: it is illegitimate to be curious about a question when you know its answer.²⁵ And why is that illegitimate? For the same reason, whatever it is, that it is illegitimate to be hungry when you are nourished. In each case there is a proprietary desire and its unique satisfier, and it is illegitimate to have both of them at once. The proprietary gustatory desire is hunger and its unique satisfier is nourishment; similarly, the proprietary epistemic desire is curiosity and its unique satisfier is knowledge. The view that knowledge is the unique satisfier of curiosity thus explains why utterances like "I know that p , but I'm curious: is p the case?" go awry.²⁶

Now to our second explanandum, that certain sorts of inquiry are bad. The view that knowledge is the unique satisfier of curiosity explains why the following weirdly actual sorts of inquiry go awry.

I sometimes check my alarm clock five or more times before going to sleep. I know far before the fifth check that it is working, but still I continue to inquire. This continued inquiry goes awry. Why is that? Here's why: continuing this inquiry is like continuing to eat after being nourished. In both cases there is a desire (hunger, curiosity); an attempt to sate that desire (eating, inquiry); a sating of that desire (by nourishment, by knowledge); and a continued attempt to sate the desire after it has already been sated (more eating, more inquiry). Whatever is awry in the eating and inquiry cases, it is the same thing in both of them. And this is because knowledge stands to curiosity as nourishment stands to hunger. The view that knowledge is the unique satisfier of curiosity thus explains why something goes awry when I continue to check my alarm clock after knowing that it works: it is because something generally goes awry when we continue to try to sate desires after they get sated.²⁷

You might object that it is a desire for reassurance or certainty, and not curiosity, that drives my alarm-checking.²⁸ But in these cases I have the phenomenology of wonder that often comes with curiosity. And if you asked if I knew the alarm was set, I'd respond with a sheepish "yeah I'm neurotic", not a "yeah I know but I want certainty". So I think I really am curious in these cases.

Here's another sort of case. I pretty much always believe in late hours of the night that the grocery store is open, without checking any sort of schedule. Sometimes these beliefs are true and sometimes they are false. They never amount to knowledge; I hold them nonetheless. Something goes awry with these beliefs. The view that knowledge is the unique satisfier of curiosity explains why this is so. The explanation uses some auxiliary claims about inquiry that I implicitly used with the alarm clock case as well. To make those claims explicit: inquiry stands to curiosity as eating stands to hunger. Just as hunger drives eating, curiosity drives inquiry. And just as eating properly ends when its driving desire is sated, inquiry properly ends when *its* driving desire is sated. With hunger and eating, the satisfier and proper end is nourishment; with curiosity and inquiry, the satisfier and proper end is knowledge. In sum, curiosity drives inquiry towards knowledge like hunger drives eating towards nourishment.

Of course, nourishment need not come from hunger-driven eating. It might come from having nutrients pumped into your veins when you aren't hungry. Similarly, knowledge need not come from curiosity-driven inquiry. It might come from listening to the radio when you aren't curious. But still, there is an important relationship in both cases - the cases of hunger, eating, and nourishment, and of curiosity, inquiry, and knowledge. When you are hungry, that hunger drives you to eat for nourishment; and when you are curious, that curiosity drives you to inquire for knowledge. It's the same relationship in both cases; or so I'd like to claim.

Putting this claim to work, we can use it explain why my grocery store beliefs go awry. Those beliefs end inquiry without knowledge; so since inquiry is driven by curiosity which is uniquely satisfied by knowledge, they end inquiry prematurely. They are premature (and thus awry) just like it is premature (and thus awry) to stop eating before being nourished. So the view that knowledge is the unique satisfier of curiosity, along with some claims about inquiry, explains why my grocery store beliefs go awry.

Now to our third explanandum, some facts about scientific practice. Consider the fact that scientists sometimes say things like "we believe that p but we do not know, so more research is needed". Why shouldn't we take them at their word, which implies that inquiry properly ends in knowledge? If knowledge is the proper end of inquiry, then knowledge is the unique satisfier of curiosity. So if we take these scientists at their word, they provide us some reason for thinking that knowledge is the unique satisfier of curiosity.

Many philosophers would resist the suggestion that we take these scientists at their word. It is widely held, and explicitly stated by e.g. Kaplan and Earman, that the only epistemic ends relevant to science are justification and truth.²⁹ These philosophers would probably say that the utterances we are considering are really about justified belief or justified true belief.

What then is the right response to these utterances: to take them at face value, or to interpret them as being about justified belief or justified true belief? In favor of the latter response it might be pointed out that no decent scientist would re-open a closed inquiry upon being told that her beliefs are justified and true but not knowledge. What if we asked a scientist to do a new experiment because the data reports she read were correct yet taken from stacks of reports many of which were mistaken? Or because her belief, though true, was formed while mistaken lab assistants gave contradictory testimony just out of earshot?

No decent scientist would re-open an inquiry on such grounds. Why not? One answer is that decent scientists do not care about knowledge, at least not insofar as it outstrips justified true belief. A different answer is that the grounds we are considering – namely, evidence that a belief is Gettiered – cannot render that belief non-knowledge. More carefully: if, while knowing p , you obtain evidence that your belief that p is Gettiered, you cannot, in virtue of obtaining this evidence, stop knowing that p . And here is why that cannot happen: evidence that your belief is Gettiered is evidence that your belief is true, and you can't stop knowing something by getting evidence for its truth. On this second answer, then, the reason no decent scientist would re-open inquiries by being told she is Gettiered is that she could not by being so told lose her knowledge.

The knowledge-centered answer is better than the justified-true-belief-centered answer, for two reasons. First, it does not require us to reinterpret plausible utterances like "we believe that p but

don't know, so more research is needed" in order to make them true, but the justified-true-belief-centered answer *does*. This first reason depends on the assumption that proper methods of inquiry are reflected in the ways scientists talk. If you dislike that assumption, consider a second reason in favor of the knowledge-centered answer: it fits with a plausible view about when closed inquiries *should* be re-opened. They should be re-opened just if the beliefs in virtue of which they are closed are not knowledge. This view explains why it is wrong for knowers to re-open inquiry upon obtaining evidence that they are Gettiered: it is wrong because that evidence cannot destroy their knowledge.

Certain sorts of "internalists" might object that the facts about what we know are not accessible by reflection alone. How could something reflectively inaccessible be the condition for properly reopening inquiry? Well, we can see how by examining similar phenomena in other domains. Suppose that you are driving 55 miles per hour. If 55 is above the speed limit, then you should slow down. But the facts about the speed limit are reflectively inaccessible. Thus there are some facts (about what the speed limit is), that can make it right to slow down, but that are reflectively inaccessible. Similarly in the epistemic case. There are some facts (about what you know), that can make it right to re-open inquiry, but that are reflectively inaccessible.

Importantly, you can *excusably* break the speed limit. For example, an optical illusion may make you see the speed limit sign as reading 55 while it actually reads 45, thereby rendering you justified in believing that the speed limit is 55. You may then go 55, and do so excusably. But you're still going the wrong speed, even though excusably; and so you should still slow down, even though reflection alone cannot teach you why.

The epistemic case is similar. Sometimes you should reopen inquiry because you do not know, while you are nonetheless justified in believing that you know. Gettier cases are like this. They are cases where you do not know, but you are justified in believing that you know. Thus they are cases where your failing to reopen inquiry is excusably wrong, in the same way failing to slow down is excusably wrong in the case of the optical illusion.

We should not, then, be persuaded by the internalist objection. On the contrary, we should retain the view that objection targets, namely the view that closed inquiries should be reopened iff the beliefs that close them aren't knowledge. And so, too, we should hold the associated view about why knowers shouldn't re-open closed inquiries upon getting evidence that they are Gettiered: it is because that evidence cannot destroy their knowledge.³⁰

We can now return to the less theoretical, more empirical point that led us to discuss Gettier cases and inquiry re-openings. That point was that scientists say things like "we believe that *p* but do not know, so more research is needed". In light of our discussion, I see no reasons against taking them at their word - taking them to be talking about, not justified belief or justified true belief, but *knowledge*. When they say that more research is needed because we don't know, they mean it.

Now, why do they say these sorts of things? At least in part, because they are true. And why are they true? At least in part, because inquiry properly ends in knowledge. And why does inquiry properly end in knowledge? Because it is driven by curiosity, which is satisfied by knowledge alone. This last view, then, explains why, when scientists say things like "we believe that *p* but we don't know it, so more research is needed", what they say is true.³¹

Other facts about scientific practice are also explained by the claim that knowledge is the unique satisfier of curiosity. Consider the practices of demanding multiple repeated outcomes of the same experiments conducted in different places by different people, and of attributing high confirmatory power to multiple and varied kinds of evidence that support the same theory. The cross-context evidential support demanded by these practices *crowds out accidentality* from the truth and justification of scientists' beliefs. But this accidentality is just what keeps justified true belief from being knowledge. Hence these practices tend to render scientific theories *known*.

The point can be illustrated by the fact that multiple independent evidential tests in Gettier cases would reveal to the victims of those cases that they should unsettle their beliefs. For instance, multiple independent examinations of fake barn country would reveal to fake barn tourists that there are facades around. On these grounds the tourists would properly stop believing that there are barns in front of them. And eventually, further examination would show that the things the tourists are looking at are barns as opposed to facades. At this point the inquiry would properly re-close with the original beliefs, since they would come to be knowledge.³²

So some good scientific practices tend to yield not only justified true belief but *knowledge*. Why is that? Here's why: because knowledge properly ends inquiry. And why does inquiry properly end in knowledge? Because it is driven by curiosity, which is satisfied by knowledge alone.

Obviously, the practices we are considering do not *necessarily* tend to yield knowledge, or for that matter anything else. They would not, for instance, squelch evil demons bent on Gettierization. But this is no problem, because there are no evil demons. In fact, cross-context evidential support tends to yield knowledge; the contingency of this fact is irrelevant.³³

4. Alternatives, lotteries, and excuses³⁴

I've argued that we should believe that curiosity is uniquely satisfied by knowledge, because that view explains a variety of data. You might think these data are explained at least as well by some other view, for instance that curiosity is uniquely satisfied by belief, true belief, justified belief, or justified true belief. But in fact none of these alternatives are as explanatory as the knowledge view; or so I'll now argue.

To some extent, these alternative views can co-opt the knowledge view's explanations. The belief and true belief views *cannot* do this with the grocery store cases. For according to the knowledge view, what goes awry in those cases is that I close a satiation attempt with said satiation unobtained; but according to the belief and true belief views, said satiation *is* obtained. The justified belief and justified true belief views, on the other hand, *can* co-opt the knowledge view's take on the grocery store cases - and the alarm clock cases too. And they can even explain why utterances like "I know that P, but I'm curious: is P the case?" go awry. For knowledge entails justification and truth; and so if justification (or its combination with truth) satisfies curiosity, these utterances evince that one holds an already-sated desire.

On another version of the true belief view, true belief is the unique satisfier of curiosity but several of our data are explained via the notion of justification. What goes awry in the alarm clock cases is, not that I hold an already-sated desire, but that I fail to believe something I'm *justified* in

believing. What goes awry in the grocery store cases is, not that I end inquiry before satisfying curiosity, but that I hold *unjustified* beliefs. What goes awry with “I know that P, but I’m curious: is P the case?” is, not anything about knowledge, but instead whatever goes awry with “I truly believe that P, but I’m curious: is P the case?”.

There is much to be said in filling out these various alternative explanations and comparing them to our knowledge-based explanations. I’ll leave this project aside, because some *further* data about scientific practices, lotteries, and Gettier cases are explained by the knowledge view alone.

Some good scientific practices tend to yield not mere justified true belief but *knowledge*. Why would this be so, if the curiosity driving science were satisfied by true belief, and any extra normativity at work were explained via justification? There is no obvious answer. Lotteries suggest that there is *no* answer. Suppose that you buy a ticket in a lottery with an enormous number of tickets, that your ticket will lose, and that you are curious about whether it will lose. It would be improper for you replace your curiosity with belief on the grounds that the number of tickets is enormous. Yet if you did so, your belief would be both justified and true. Therefore, neither justified belief nor justified true belief properly end inquiry. Only knowledge properly ends inquiry. This is the lesson of the lottery. The justified and justified true belief views of curiosity satisfaction run aground on it, but the knowledge view navigates it with ease.

Of course, it would be foolish to keep inquiring into whether you will win the lottery, after you have been informed of the odds. But when I say that in such cases you should not close inquiry with belief, I do not mean that you *should* keep inquiring. I just mean that you *should not close inquiry with belief*. Consistently with this it may be right to suspend inquiry, to table it, to put it on hold, without believing. So you should sometimes *suspend* inquiry when you *don’t* know, for instance in the lottery case. But still, you should *close inquiry with belief* only if you *do* know. In the lottery case you *don’t* know, and this is what explains why, in that case, you should not close inquiry with belief. So, again, you should close inquiry with belief iff you know.

This view entails that Gettiered beliefs are improper inquiry closers, that it is wrong to close inquiry with them. You may find this pill too bitter to swallow. If that’s so, then maybe it is so because you think *their justification* makes Gettiered beliefs proper inquiry closers. But that thought can’t be right, because *lottery* beliefs are *improper* inquiry closers *despite* being justified. Perhaps you’ll nonetheless insist that it is proper to close inquiry with Gettiered beliefs. In that case one more thing may still help you swallow Gettiered impropriety: some sugar for the pill. Gettiered beliefs do have *something* going for them: they are *excusably* improper inquiry closers. To see why they are excusable, we should return to the comparison of believing to driving. Let me make the central principle in that comparison explicit: if it is proper to Φ iff x obtains, then it is excusable to Φ if you are justified in believing that x obtains.³⁵

Let’s apply this principle to driving. It is proper to drive 55 iff 55 is within the speed limit. Given our principle then, it follows that it is excusable to drive 55 if you are justified in believing that 55 is within the speed limit.

Now let’s apply this principle to inquiry closure. It is proper to close inquiry with belief iff you know. Given our principle then, it follows that it is excusable to close inquiry with belief if you are justified in believing that you know. And in Gettier cases you *are* justified in believing that

you know. That is why Gettiered beliefs are excusable inquiry closers. Their excusability follows from our general principle, combined with the claim that it is proper to close inquiry with belief iff you know. We thus have not just a *claim* that Gettiered beliefs are excusable despite their impropriety, but an explanation of why this is so.

How does this explanation apply to *lottery* beliefs? Well, importantly, you are not justified in believing that you *know* your ticket will lose. You *are* justified in believing that your ticket *will* lose, because (a) your evidence that your ticket will lose is as strong as anyone's evidence for any scientific theory, (b) some people have evidence for scientific theories that is strong enough to justify belief in those theories, and (c) if evidence of a given strength justifies belief in any case, then evidence of that strength justifies belief in every case. Yet you are *not* justified in believing that you *know* your ticket will lose.³⁶ For you know it is false that you know it will lose, and you can't be justified in believing what you know is false. As a result, you *aren't* justified in believing you *know* your ticket will lose, but you *are* justified in believing it *will* lose.³⁷

Given this result, our claims about proper and excusable inquiry closure do not make lottery beliefs excusable inquiry closers, while they *do* make Gettiered beliefs excusable inquiry closers. They give some sugar to Gettiered beliefs but none to lottery beliefs. This is to their credit - for Gettiered beliefs in fact have something going for them as inquiry closers whereas lottery beliefs do not, even though both of these sorts of beliefs are justified and true but not knowledge. And it is to their credit *alone* - for no other view so far has accounted for this asymmetry.

To recapitulate. Some alternative views of curiosity satisfaction co-opt some of the knowledge view's explanations. Another alternative takes true belief to uniquely satisfy curiosity and appeals to *justification* in its explanations. None of these alternatives are as explanatory as the knowledge view. For these alternatives don't explain, but the knowledge view *does* explain, (a) why some good scientific practices tend to yield knowledge, (b) why it is improper to close inquiries with lottery beliefs, and (c) why Gettiered beliefs have something going for them as inquiry closers whereas lottery beliefs do not.

You might retreat to a final alternative: that the unique satisfier of curiosity is justified belief that one knows.³⁸ This view explains why it is improper to close inquiry with lottery beliefs, because in lottery cases you cannot have a justified belief that you know. It also accounts for the asymmetry between lottery beliefs and Gettiered beliefs, because in Gettier cases you *can* have a justified belief that you know. So this final alternative is at least two steps ahead of the knowledge view's other competitors. But it's at least two steps *behind* the knowledge view itself. It is more complicated than the knowledge view, and it entails that you can satisfy your curiosity only if you have the concept **knows**. Like the other alternatives then, it should be rejected.³⁹

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- Alston, William. 2005. *Beyond "justification": dimensions of epistemic evaluation*. Cornell University Press.
- Axtell, Guy. 1997. "Recent work in virtue epistemology," *American Philosophical Quarterly* (34): 1-27.
- , 2000 (ed), *Knowledge, belief, and character*. Rowman and Littlefield.
- Bach, Kent. 2007. "Review of Robert Fiengo, *Asking questions: using meaningful structures to imply ignorance*". *Notre dame philosophical reviews*: 11/09/2007.
- Baehr, Jason. 2006. "Character in epistemology". *Phil Studies* (128): 479-514.
- , 2009. "Is there a value problem?". In Haddock et. al. 2009.
- Bernecker, Sven and D. Pritchard (eds). 2010. *The routledge companion to epistemology*. Routledge.
- Bishop, Michael and J.D. Trout. 2004. *Epistemology and the psychology of human judgment*. Oxford University Press.
- Bonjour, Laurence. 1985. *The structure of empirical knowledge*. Harvard University Press.
- Brady, Michael. 2009. "Curiosity and the value of truth". In Haddock et. al. 2009.
- Carroll, Lewis. 1865/2002. *Alice in wonderland*. Scholastic Paperbacks.
- Christensen, David. 2004. *Putting logic in its place: formal constraints on rational belief*. Oxford University Press.
- Chisholm, Roderick. 1977. *Theory of knowledge, second edition*. Prentice-Hall.
- , 1982. *The foundations of knowing*. University of Minnesota Press.
- Clark, Andy. 1997. *Being there: putting brain, body, and world together again*. MIT Press.
- Code, Lorraine. 1987. *Epistemic responsibility*. Brown University Press.
- Cohen, Stewart. 1984. "Justification and truth". *Phil Studies* (46): 279-295.
- , 1999. "Contextualism, skepticism, and the structure of reasons". *Phil Perspectives* (13): 57-89.
- David, Marian. 2001. "Truth as the epistemic goal". In Steup 2001.
- DePaul, Michael. 2001. "Value monism in epistemology", in Steup 2001.
- DePaul, Michael and Linda Zagzebski (eds). 2003. *Intellectual virtue*. Oxford University Press.
- Earman, John. 1993. "Underdetermination, realism, and reason", *Midwest Studies in Philosophy* (18): 19-38.
- Fairweather, Abrol and Linda Zagzebski (eds). 2001. *Virtue epistemology*. Oxford University Press.
- Fallis, Don. 2006. "Epistemic value theory and social epistemology". *Episteme* (2): 177-188.
- Feldman, Richard. 2001. "Review of *Knowledge in a social world*". *BJPS* (52): 163-68.
- , 2007. "Knowledge and lotteries". *PPR* 75/1: 211-226
- Fiengo, Robert. 2007. *Asking questions: using meaningful structures to imply ignorance*. Oxford University Press.
- Foley, Richard. 1987. *The theory of epistemic rationality*. Harvard University Press.
- , 1993. *Working without a net*. Oxford University Press.
- , 1996. "Knowledge is accurate and comprehensive enough belief". In Kvanvig 1996.
- , 2004. "A trial separation between the theory of knowledge and the theory of justified belief". In Greco 2004.
- Gabbay, Dov M. and F. Guenther (eds). 2002. *The handbook of philosophical logic, 2nd edition, volume 8*. Springer.
- Gigerenzer, Gerd, Peter Todd, and the ABC Research Group. 1999. *Simple heuristics that make us smart*. Oxford University Press.
- Goldman, Alvin I. 1986. *Epistemology and cognition*. Harvard University Press.
- , 1991a. "Stephen P. Stich: *The fragmentation of reason*". *PPR* 51/1: 189-193.
- , 1991b. "Epistemic folkways and scientific epistemology". In his *Liaisons: philosophy meets the cognitive and social sciences*. MIT Press.
- , 1999. *Knowledge in a social world*. Oxford University Press.
- , 2001. "The unity of epistemic virtues". In Fairweather and Zagzebski 2001.
- Goldman, Alvin I. and Erik J. Olsson. 2009. "Reliabilism and the value of knowledge". In Haddock et. al. 2009.
- Greco, John. (ed). 2004. *Ernest Sosa and his critics*. Blackwell.
- , 2003. "Knowledge as credit for true belief." In DePaul and Zagzebski 2003.
- , 2010. *Achieving knowledge*. Cambridge University Press.
- Grimm, Stephen. 2008. "Epistemic goals and epistemic values." *PPR* 77 (3):725-744..
- Greenough, Patrick and D. Pritchard (eds) 2009. *Williamson on knowledge*. Oxford University Press.
- Groenendijk, Jeroen and Martin Stokhof. 1997. "Questions". In van Bentham and Ter Meulen 1997.
- Haack, Susan. 1993. *Evidence and inquiry*. Blackwell.
- Haddock, A., A. Millar and D.H. Pritchard (eds.) 2009. *Epistemic value*. Oxford University Press.
- Harman, Gilbert. 1986. *Change in view*. MIT Press
- Harrah, David. 2002. "The logic of questions". In Gabbay and Guenther 2002.
- Hawthorne, John. 2004. *Knowledge and lotteries*. Oxford University Press.
- Hawthorne, John and Jason Stanley. 2008. "Knowledge and Action". *J Phil* 105 (10):571-90.
- Hendricks, Vincent and D. Pritchard (eds). 2008. *New waves in epistemology*. Plagrave Macmillan

- Hutchins, Edwin. 1996. *Cognition in the wild*. MIT Press.
- James, William. 1911. *The will to believe and other essays in popular philosophy*. McKay.
- Jones, Ward. 1997. "Why do we value knowledge?". *APQ* (34): 423-39.
- Kaplan, Mark. 1985. "It's not what you know that counts". *J Phil* (82): 350-363.
- Kitcher, Philip. 1992. "The naturalists return". *Phil Review* (101/1): 53-114.
- . 1993. *The advancement of science*. Oxford University Press.
- . 2001. *Science, truth, and democracy*. Oxford University Press.
- Kvanvig, Jonathan. (ed). 1996. *Warrant in contemporary epistemology*. Rowman and Littlefield.
- . 2003. *The value of knowledge and the pursuit of understanding*. Cambridge University Press.
- . 2005. "Truth is not the primary epistemic goal". In Steup and Sosa (2005).
- . 2009. "Assertion, knowledge, and lotteries". In Greenough and Pritchard (2009).
- Kyburg, Henry. 1961. *Probability and the logic of rational belief*. Wesleyan University Press.
- Lackey, Jennifer. 2007. "Norms of assertion". *Nous* 41/4: 594-626.
- Levi, Isaac. 1984. *Decisions and revisions: philosophical essays on knowledge and value*. Cambridge University Press.
- . 1991. *The fixation of belief and its undoing*. Cambridge University Press.
- Loewer, Barry. 1993. "The value of truth". In E. Villanueva (ed.), *Philosophical Issues* (4).
- Lynch, Michael. 2005. *True to life: why truth matters*. MIT Press.
- Moore, Edward (ed.) 1972. *Charles S. Peirce: the essential writings*. Harper and Row.
- Neta, Ram. 2008. "How to naturalize epistemology". In Hendricks and Pritchard 2008.
- Peirce, Charles. 1877. "The fixation of belief". Reprinted in Moore 1972.
- Pritchard, Duncan. 2010. "Knowledge and understanding". In *The Nature and Value of Knowledge: Three Investigations*. Co-written with Alan Miller and Adrian Haddock. Oxford University Press.
- Riggs, Wayne. 2002. "Reliability and the value of knowledge." *PPR* (64): 79-96.
- . 2003. "Understanding 'virtue' and the virtue of understanding". In Depaul and Zagzebski 2003.
- Roberts, Robert and Jay Wood. 2007. *Intellectual virtues: an essay in regulative epistemology*. Oxford University Press.
- Ryan, Sharon. 1999. "What is wisdom?". *Philosophical Studies* (93): 119-139.
- Steup, Matthias and Ernest Sosa (eds). 2005. *Contemporary debates in epistemology*. Blackwell.
- Skyrms, Brian. 1990. *The dynamics of rational deliberation*. Harvard University Press.
- Sosa, Ernest. 1993. "Proper functionalism and virtue epistemology". *Nous* (27/1): 51-65.
- . 2001. "For the love of truth?". In Fairweather and Zagzebski 2001, pp. 49-62.
- . 2003. "The place of truth in epistemology". In Depaul and Zagzebski 2003, pp. 155-180.
- . 2007. *Apt belief and reflective knowledge*. Oxford University Press.
- Stanley, Jason. 2005. *Knowledge and practical interests*. Oxford University Press.
- Steup, Matthias (ed). 2001. *Knowledge, truth, and duty*. Oxford University Press.
- Stich, Steve. 1991. *The fragmentation of reason*. MIT Press.
- . 1993. "Naturalizing epistemology: Quine, Simon, and the prospects for pragmatism". In *Philosophy and cognitive science*, Cambridge University Press.
- Sutton, Jonathan. 2007. *Without justification*. MIT Press.
- van Benthem, Johan and Alice Ter Meulen (eds). 1997. *Handbook of logic and language*, MIT Press.
- Van Fraassen, Bas. 1980. *The scientific image*. Oxford University Press.
- Weiner, Matt. 2005. "Must we know what we say?". *Phil Review* 114/2: 227-251.
- Whitcomb, Dennis. 2010. "Wisdom." In Bernecker and Pritchard 2010.
- Williams, Bernard. 2002. *Truth and truthfulness*. Princeton University Press.
- Williamson, Timothy. 2000. *Knowledge and its limits*. Oxford University Press.
- Zagzebski, Linda. 1996. *Virtues of the mind*. Cambridge University Press.
- . 2000. "From reliabilism to virtue epistemology". In Axtell 2000.
- . 2003. "The search for the source of epistemic good". *Metaphilosophy* (34): 12-28.
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¹ Talk of epistemic goals is widespread; see especially Foley (1987, 1993) and, though they use slightly different terminology, Chisholm (1977) and James (1911).

² Bonjour (1985: 7-8).

³ David (2001: 152) locates this focus in writings by Moser, Foley, Lehrer, Goldman, Sosa, and Plantinga; and the list can easily be multiplied. Epistemological work that does *not* focus on truth includes the “responsibilist” virtue-theoretic approach of Code (1987), Zagzebski (1996), and Roberts and Wood (2007); the “pragmatist” approach of Stich (1991, 1993); and the “knowledge first” approach of Williamson (2000).

⁴ DePaul (2001: 173).

⁵ For some competing approaches to significance see Zagzebski (2003), Roberts and Wood (2007), Levi (1984), Kitcher (1992, 1993), and Bishop and Trout (2004). For variations on the theme that significance arises from curiosity, see Goldman (1986, 1999), Harman (1986), Sosa (2001, 2003), and Kitcher (2001).

⁶ The literatures here are vast. On true belief see e.g. Levi (1984), Skyrms (1990), Stich (1991), Loewer (1993), Haack (1993), Goldman (1999), Sosa (2001, 2003, 2007), Lynch (2005), and Alston (2005). On knowledge see e.g. Zagzebski (2000), Sosa (2001, 2003, 2007), Greco (2003, 2010), Riggs (2002), Jones (1997), Kvanvig (2003), Goldman and Olsson (2009), Baehr (2009), and Pritchard (2010).

⁷ On the true belief here see Goldman (1986, 1999) and Alston (2005). On knowledge here see Williamson (2000). For critical discussion see Grimm (2008) and Brady (2009).

⁸ Zagzebski (1996: 134-135, 144, 148).

⁹ Foley (1987: 11).

¹⁰ Goldman (1991a: 190). For theoretical developments of that sentiment, see Goldman (1986: 122-128 and 1999: 88-96). For criticisms of those developments see Feldman (2001), Fallis (2006), and Grimm (2008).

¹¹ Williamson (2000: 31).

¹² Kvanvig (2003: 145-146).

¹³ Kvanvig (2003: 146). Also see Kvanvig (2003: 171), which is perhaps intended to add some detail to the view.

¹⁴ Sometimes “ascertain” gets replaced by “determine” and “find out”; see Kvanvig (2003: 9 and 2005: 293). These replacements do not affect my arguments.

¹⁵ Kvanvig (2003: 145-146)

¹⁶ See Hutchins (1996) and Gigerenzer et. al. (1999). On the philosophical import of this work see Clark (1997), Goldman (1999), and Bishop and Trout (2004). I assume Kvanvig intends for this discussion to apply to *all* mature sciences of inquiry. If the intended quantifier is instead existential or generic, the issues still seem up in the air.

¹⁷ An anonymous referee suggested that maybe the pill *does* bring hunger satisfaction. But firstly, the pill has no positive influence on hunger’s broader role in keeping you alive and healthy. Without any such influence, it is hard to see how something could bring hunger satisfaction. Secondly, as noted above, to satisfy hunger is to get what hunger is a desire for. But then since the pill just brings *perceived* nourishment, the view that the pill brings hunger satisfaction entails that hunger is a desire for *perceived* nourishment. And it is more plausible that hunger is instead a desire for *nourishment*. For both of these reasons, then, it is implausible that the pill brings hunger satisfaction.

¹⁸ See Kvanvig (2003: 103-110).

¹⁹ I assume that propositions are individuated Fregeanly not Millianly; otherwise these would be the same proposition. It would be interesting to examine the issues in this section from a Millian point of view, but I leave that project aside.

²⁰ Goldman's writings about curiosity also focus on questions; see the references in footnote 10.

²¹ You might ask why this is so. Well, here's the answer. Believing requires you to conceive only of everything the propositions (which are the contents of your beliefs) are about. On the view that the contents of curiosity are questions, parity pushes us to say something similar about what curiosity requires. In particular, parity pushes us to say that being curious requires you to conceive only of everything the questions (which are the contents of your curiosity) are about. In other words: if the contents of curiosity are questions, then curiosity requires you to conceive only of everything your questions are about.

²² So identified more often in the "responsibilist" than the "reliabilist" tradition of virtue epistemology. For work in the latter tradition see Goldman (2001) and Sosa (2007); for work in the former tradition see the references in footnote 3. For discussions of the two traditions themselves, see Axtell (1997) and Baehr (2006).

²³ Sometimes "curious" means "strange", as in "...a grin without a cat! It's the most curious thing I ever saw in all my life!" (Carroll 1865: 77). On this meaning, curious people are *strange* people. I leave this meaning aside.

²⁴ In section 4 we'll see how the third clause explains other data too, these concerning lotteries and Gettier cases.

²⁵ I'm assuming that every question has a unique answer. It would be nice to eventually remove this idealization. Many questions, for instance "Is grass green?" do have unique answers. But some questions, for instance "What is your father's name or your mother's name?" have multiple answers. For discussions of this phenomenon and many others that I am idealizing away from, see Van Fraassen (1980), Groenendijk and Stokhof (1997), Harrah (2002), Fiengo (2007), and Bach (2007). It would be nice to bring this work into the discussion. It would also be nice to bring in "higher" epistemic states like understanding and wisdom; here see Zagzebski (1996), Ryan (1999), Riggs (2003), Kvanvig (2003), and Whitcomb (2010).

²⁶ An anonymous referee suggested this objection: if knowledge satisfies curiosity but subjective justification does not, then we should expect a difference in felicity between "I know that p but I'm curious about whether p" and "I have really good reason to believe that p, but I'm curious about whether p"; and there may not be any such difference. I don't find this objection convincing. Consider utterances like "I have really good reason to believe that p but I don't know whether p, and I'm curious about whether p". These seem just fine, as predicted by the knowledge view.

²⁷ This alarm clock case is similar to Cohen's (1999) case about travelers who check their flight plans despite knowing (or at least claiming to know) their itineraries. See Feldman (2007) for helpful discussion of that case.

²⁸ Thanks to an anonymous referee for raising this objection.

²⁹ Kaplan (1985), Earman (1993).

³⁰ Contrast these arguments about curiosity, knowledge, and testimony that you are Gettiered, with Kvanvig's (2003: 177-78) arguments about the same things.

³¹ You might object to this whole line of thought by claiming that "believe", as used in utterances like "We believe P but we don't know, so more research is needed", doesn't refer to belief but instead expresses a lack of confidence. Even if that claim is true, though, the line of thought still supports the view that knowledge is the unique satisfier of curiosity. For even then, the utterances are true – more inquiry *is* needed – because the inquirers don't yet know.

³² This paragraph leans on Foley (1996, 2004). Also, my talk of inquiry closure is sort of Peircean. See Peirce (1877) and Levi (1991).

³³ There are noteworthy alliances between my treatment of knowledge as akin to nourishment, Neta's (2008) "teleological naturalism", and the view that belief aims at knowledge, which view is advocated by e.g. Williamson (2000: 208) and Sutton (2007). Also noteworthy are the connections between my last points in this section, and the well-worn discussions of the "new evil demon problem" for reliabilism. See Cohen (1984), Goldman (1991b), and Sosa (1993).

³⁴ In this section especially, my arguments connect to the "norm of assertion" literature. See Williams (2002), Weiner (2005), Lackey (2007), Kvanvig (2009), and especially Williamson (2000). For related work on action see Stanley (2005) and Hawthorne and Stanley (2008). On lotteries see Kyburg (1961), Christensen (2004), and Hawthorne (2004).

³⁵ By "justified in believing p " I mean "propositionally justified in believing p " – a status you can have when you don't believe p , but are justified *to* believe it. By "justified belief that p " I mean "doxastically justified belief that p ", a state you can be in only when you believe p . So in my terminology, "justified in believing" talk is about propositional justification, and "justified belief" talk is about doxastic justification. Thanks to Declan Smithies for helping me make this explicit.

³⁶ For an alternative view see Chisholm (1982), who claims that if you are justified in believing p , you are justified in believing that you know p .

³⁷ That you know it is false that you know your ticket will lose is surely true of *you*, my reader. It isn't true of folks who've never thought about knowledge and lotteries. Still, these folks are *in a position to know* it is false that they know their tickets will lose. And this is sufficient for them to not be justified in believing that they know their tickets will lose. Thanks to Clayton Littlejohn for helping me think through these points.

³⁸ Thanks to an anonymous referee for suggesting a view along these lines.

³⁹ Thanks to Jason Baehr, Chris Bryant, Pavel Davydov, Don Fallis, Alvin Goldman, Dan Howard-Snyder, Frances Howard-Snyder, Hud Hudson, Peter Klein, Shieva Kleinschmidt, Ernest Sosa, Aaron Washington and Ryan Wasserman for helpful comments on ancestors of this paper.