

## Some Epistemic Roles for Curiosity

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I start with a critical discussion of some attempts to ground epistemic normativity in curiosity. Then I develop three positive proposals. The first of these proposals is more or less purely philosophical; the second two reside at the interdisciplinary borderline between philosophy and psychology. The proposals are independent and rooted in different literatures. Readers uninterested in the first proposal (and the critical discussion preceding it) may nonetheless be interested in the second two proposals, and vice versa.

The proposals are as follows. First I argue that, among several ways in which the notion of curiosity might be used to delineate significant truths from trivial ones, a particular way is the most promising. Second, I argue that curiosity has some underappreciated epistemic roles involving memory. Third, I argue that curiosity has some underappreciated epistemic roles involving coherence.

First I should point out a wholly commonsensical epistemic role for curiosity, a role that has been stressed by numerous theorists. This is the instrumental role of curiosity in helping us acquire knowledge and other epistemic goods such as justified belief and understanding.<sup>1</sup> The idea here is that curiosity is some sort of motivational state – a desire or an emotion, perhaps – and that it motivates us to seek out answers to our questions.<sup>2</sup> When come to find these answers, we often also come to *know* them or at least have justified beliefs in them (or some other positive epistemic state concerning them, such as understanding). In virtue of motivating us to obtain these positive epistemic states, curiosity possesses some instrumental epistemic value. Of course, there are limits. For one thing, curiosity not the *only* thing that causes us to come to know; we can come to know things through being talked at by a boorish drunkard, or by simply trusting our senses as we involuntarily see things in front of us, or even innately through processes culminating long before we ever have any curiosity. For another thing, it is only in the presence of suitable further conditions that curiosity does indeed result in positive epistemic outcomes (like knowledge) as opposed to negative epistemic outcomes (like false belief), or even any outcomes at all.

What are the conditions required for curiosity to lead to positive epistemic outcomes? In some cases these conditions might include a propensity to properly weigh one's evidence; in other cases a propensity to trust one's senses; and in other cases still a healthy propensity to *distrust* those senses. While these background conditions are heterogeneous, manifesting in very different ways across different cases, there is no doubt that without them, curiosity stands little chance of yielding epistemic goods. Nonetheless, when the right background conditions *are* in place, curiosity *does* serve as an instrument for acquiring epistemic goods. This point is more or less a platitude; conjecturing it is fairly uncontroversial, and I will have little more to say about it.

In the remainder of the paper I discuss some less platitudinous, more challenging proposals. One family of proposals, to which I now turn, attempts to (in some sense) ground epistemic value in curiosity. I will critically discuss a number of versions of this proposal.

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<sup>1</sup> Goldman (1999), Kitcher (2001), Harman (1986), Schmitt and Lahroodi (2008), Kvanvig (2012), Morton (2013).

<sup>2</sup> A number of psychologists, for instance Silvia (2006), view curiosity as an *emotion*. These psychologists group curiosity, quite naturally, with such emotions as confusion, surprise, awe, and fascination; and they call the group the "knowledge emotions". See Silvia and Kashdan (2011: 369).

## I. Curiosity as the source of epistemic value

Many theorists have hinted that curiosity is what makes it epistemically valuable to hold true beliefs.<sup>3</sup> Some have even built explicit theories around that idea.<sup>4</sup> It is thus something of a theme that curiosity is in some way the source of the epistemic value of true belief. There are numerous possible ways to develop this theme. For example, it could be developed into the following theory:

For all persons S, propositions P, and times T: if S truly believes P at T, it is in virtue of S's being curious at T about whether P, that S's true belief that P at T possesses epistemic value.

While this theory is straightforward, it is not plausible. For, typically at least, when we come to learn something we stop being curious about whether that thing is true. For instance, if you are curious about whether it froze last night, and you come to learn that it did, then typically you stop being curious about whether it froze last night. In such cases your true belief possesses epistemic value, even though your curiosity is no longer present – contrary to our theory.

We could try to circumvent this problem by taking one's *past* curiosities, not one's current curiosities, to be the things that render one's current true beliefs epistemically valuable. But it is not clear which of one's past curiosities ought to matter. Is it just the immediately past curiosities that render one's present true beliefs epistemically valuable, or do more distantly past ones count as well? And if curiosities from different times in one's past matter, and one was at those different times curious about different things, or to different degrees about the same things, then how exactly are these various levels of curiosity at times aggregated? How exactly do they combine to yield epistemic value, or degrees of the same?

Leaving these questions aside, there is a deeper problem with theories attempting to ground the epistemic value of true belief in the curiosity of the believer. The problem is that one's true beliefs have epistemic value even when they don't answer to one's (present *or* past) curiosities. And similarly with other epistemic states such as knowledge and understanding. There is something valuable, from an epistemic point of view, with believing or knowing the truth, even when that truth is unconnected to what one is or was curious about. One way to see this is to pick something unconnected to your curiosities – for instance, the exact number of grains of sand on the earth. It would be better, epistemically, for you to have a true belief about this matter than for you to have a false belief about it. But if the epistemic value of true belief derived from its relationship to curiosity, then this would not be so, for your true belief would have no epistemic value at all.

One might object by claiming, as Miscevic (2007: 259) claims, that it really is no better, epistemically, to be knowledgeable rather than ignorant when it comes to propositions completely disconnected to one's curiosity. But this objection is unconvincing. For consider a pair of cases, where in one case a person knows *all* the propositions that are unconnected to his curiosity, and in the other case a person knows *none* of them. Surely the former of these people is better off than the latter, epistemically speaking; but this requires that knowledge of the curiosity-unconnected is better epistemically than ignorance of the curiosity-unconnected.

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<sup>3</sup> Foley (1987: 11), Alston (2000: 31).

<sup>4</sup> Goldman (1999: 69-100), Miscevic (2007).

Now, there are in the literature more complicated attempts to ground the value of true belief in curiosity, attempts that may evade the foregoing criticisms. The key characteristic of these attempts is that they focus on one kind or another of *idealized* curiosities – the curiosities one *would* have if one *were* in some situation other than the situation one is actually in.<sup>5</sup>

But *which* other situation? We might try to start answering this question by turning to the theory of prudential (as opposed to epistemic) value. There is a long tradition of theorizing about prudential well-being in terms of the extent to which a person possess those things which she would desire if she were fully informed of the empirical facts.<sup>6</sup> A similar approach in the current context would tell us that a person's true belief has epistemic value only if she would be curious about whether that belief is true, if she were fully informed of the relevant empirical facts. But this view problematically entails that, in typical cases, empirical true beliefs have no epistemic value. For, at least in typical cases, people stop being curious about whether a given belief is true once they become informed about whether it is true.

Where else should we look, then, to answer the question of which situation is the relevant one, the one such that a given person's true belief has epistemic value only if that person would be curious about the matter in *that* situation? The answer is: we can look to work by Alvin Goldman, who has on offer the most detailed theory in the ballpark. According to Goldman, there are three kinds of curiosity: *occurrent* (where one is attending to a question), *dispositional* (where one would be occurrently curious were one to attend to a question), and *extended* (where there are facts such that, if one were to learn them, one would be dispositionally curious about a question).<sup>7</sup> True beliefs get their epistemic value, on Goldman's view, by satisfying *any* of these sorts of curiosity.

While this is an improvement on our original theory, it is not wholly satisfactory. For consider what might be called *tenacious believers* - people for whom *no* knowledge would bring curiosity about certain questions. There are e.g. religious people for whom no knowledge would bring curiosity about whether God exists. Should these people have true beliefs or knowledge about the matter of whether God exists, those true beliefs or that knowledge would have epistemic value. Tenacious believers, then, are problematic for Goldman's attempt to ground in curiosity the epistemic value of true belief.

We have been exploring versions of the idea that the epistemic value of true belief is grounded in curiosity, so that it is in some sense because of their connections to our curiosity that true beliefs have epistemic value. This idea is, we have seen, difficult to develop satisfactorily. Perhaps, then, we should look elsewhere for curiosity's epistemic roles.<sup>8</sup>

## II. Some positive proposals

I argued in the last section that it is difficult to develop the idea that it is in virtue of its relationship to curiosity that true belief has epistemic value; similar arguments would apply to similar attempts to ground the epistemic value of other things, for instance knowledge and understanding, in curiosity. I will now move on to some more promising epistemic roles for curiosity, roles I think curiosity may well fulfill. I'll identify three such roles: one involving significance, a second involving the temporal extent of one's knowledge, and a third involving coherence.

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<sup>5</sup> Goldman (1999) and Miscevic (2007) fall into this camp.

<sup>6</sup> Such theories are often called "informed desire theories of well-being". For discussion see Griffin (1988).

<sup>7</sup> Goldman (1999: 95, 350).

<sup>8</sup> See Brady (2009) for further critical discussion about curiosity and the value of true belief.

## A. Significance

I start with a role closely associated with the role Goldman gives curiosity, a role involving what I will call “epistemic significance”. Perhaps there is a sort of epistemic normativity associated with knowledge (and justified belief and true belief and so on) of significant things as opposed to trivialities. And perhaps, the difference between the significant and the trivial is somehow rooted in curiosity. If it is better epistemically to know the significant as opposed to the trivial, and truths are significant to the extent that they answer to our curiosity, then curiosity underpins a further aspect of epistemic value over and above knowledge (and true belief and so on) – in particular, it underpins *significance*.

The view that curiosity underpins significance is difficult to develop in a satisfactory way, and the difficulties here mirror the difficulties with developing the view that curiosity underpins the epistemic value of true belief. We can start to bring these difficulties out by considering a very simple development of the idea:

a proposition is significant for a given person at a given time if and only if it answers some question that person is curious about at that time.

One problem with this view comes from the fact that, at least typically, we stop being curious about a given question when we come to know its answer. Given this fact, the foregoing theory entails that we cannot, at least not in typical cases, know anything that is significant. All of our knowledge turns out to be trivial, given that we lose our curiosity (about the relevant question) once the knowledge (of the answer to that question) comes about.

In response to this problem we might change the theory, so that past curiosities are what matters, making it into the theory that propositions are significant for a given person if and only if they answer to his *past* curiosities. But one wonders which past curiosities matter – just the immediately past ones, or one’s going farther back as well? And if curiosities from different times in one’s past matter, and one was at those different times curious about different things, or to different degrees about the same things, then how exactly are these various levels of curiosity at times aggregated? How exactly do they combine to yield significance or degrees of the same?

Another alternative is to make significance a function of, not what one actually is or was curious about, but rather what one *would* be curious about in some idealized situation. But it is difficult to see what the relevant idealized situation might be, compatibly with the resulting overall theory of significance remaining plausible. For instance, suppose we set up the theory to say that a proposition is significant if and only if it answers some question one would be curious about *if one were aware of all the empirical facts*. (Again compare: “the obtaining of state of affairs X increases one’s well-being if and only if one would want X to obtain if one were aware of all the empirical facts”).

Set up like *this*, the curiosity-based theory of significance is not a plausible one. Since we typically stop being curious about a question when we come to know its answer, this theory entails that, at least in typical cases, empirical facts have no significance. Thus we get the result that, at least typically, empirical knowledge is knowledge of trivialities. And this result seems mistaken.

It is hard to see how we might alter the approach, changing the relevant counterfactual scenarios, without facing a similar result, a result to the effect that certain propositions which are

in fact significant turn out insignificant by the lights of the theory due to being propositions one would know (and thus not be curious about) in the relevant counterfactual scenario.<sup>9</sup>

A different attempt to distill significance from curiosity is more promising. This attempt, due to Kitcher (2001: 63-82, 2004), combines the notions of *what one is actually curious about* and of *relevance*, telling us that a proposition is significant for a given person if and only if it answers a question he is curious about, *or is relevant to* an answer to a question he is curious about. For instance, one might be fascinated by the fact that, from a mere seed, along with water and soil and sunlight, there arises a plant; and one might naturally be curious about how this process works. In virtue of being part of the answer to the question of how this process works, the proposition *that genes play a central role in development* has some epistemic significance. Various other propositions are relevant to *that genes play a central role in development*, for instance the proposition *that genes are encoded by (or are identical to or are in some other way intimately related to) certain strands of DNA*. And the latter proposition is itself connected to many other propositions, which themselves inherit some significance from *it*. Through these connections of relevance, significance spreads across a vast array of propositions, demarcating the significant from the trivial in a way that is ultimately grounded in our curiosities.

This curiosity-and-relevance approach is promising. It deserves extended development and scrutiny. For one thing, it would be useful to explore some detailed theories about the nature of the relevance relation involved. Exactly what is relevant to exactly what, in the sense of “relevance” at work here? For another thing, it would be useful to give an accounting of the relative virtues of the curiosity-and-relevance approach and other approaches to significance in the literature, for instance approaches focusing on flourishing (Baril 2010), well-being (Bishop and Trout 2005, Grimm 2011), or a plurality of various characteristics (Roberts and Wood 2007). Once this work is done, the curiosity-and-relevance approach to significance may well turn out to be the best approach on the market. One plausible epistemic role for curiosity, then, consists in its role in determining which propositions are significant as opposed to trivial, and thus which items of knowledge get some epistemic value in virtue of their being knowledge of the significant as opposed to the trivial.

## B. Temporal Extent

There are numerous *instrumental* epistemic roles for curiosity. One of them is fairly commonsensical; this is the instrumental role of curiosity in bringing us to know the answers to questions we are curious about. As we have already seen, this instrumental epistemic role for curiosity is widely recognized.

A variety of other instrumental epistemic roles for curiosity are less commonsensical and less recognized (if recognized at all), at least by epistemologists. These roles are suggested by (among other things) some recent work in psychology, work which has uncovered empirical reasons to believe that curiosity is an instrument not only for our coming to know the answers to questions we are curious about, but also for the following two additional things:

- a) Increasing the amount of time we retain knowledge of the relevant answers, and
- b) Increasing the amount of time we retain *other* information, unrelated to those answers, which we encounter while curious.

As for (a), increases in the amount of time we retain knowledge of answers to the questions we are curious about, evidence is available from Kang et al 2009. Here, experimenters gave subjects a

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<sup>9</sup> This problem is an instance of a well-known general pattern, namely the “conditional fallacy”. See Shope (1978).

list of trivia questions designed to elicit a mix of high and low curiosity. The questions were read to the subjects, who then guessed the answers, rated their curiosity about each of the questions, and rated how confident they were that they knew the answers to each of the questions. The questions were then presented to the subjects again, along with the correct answers. Subjects were, one to two weeks later, given a surprise request to return to the lab, where they were again asked the same questions. As it happened, among the cases where subjects had initially guessed incorrectly what an answer was, their recall of the true answer was significantly correlated with the degree to which they had initially been curious about those questions. The take-home point, as Kang et al summarize it, is that “these results support the hypothesis that higher curiosity levels lead to better recollection”.<sup>10</sup>

More recent related work (Gruber et al 2014) suggests that curiosity also leads to better recollection of *incidental information* one encounters while curious, information unrelated to the question one is curious about. In this work, participants again were given a series of trivia questions, and asked to guess the answers, and then given the answers. After a 24 hour delay, participant recall of true answers correlated significantly with their curiosity about the relevant questions. This is an important replication of Kang et al’s results.

But in addition to replicating those results, Gruber et al came upon another result as well. During the intervening time between when the subjects were given the trivia questions, and when those subjects were told the answers to those questions, the subjects were shown images of random faces. As it happened, their ability to recall those faces at the end of the experiment, and their ability to recall those faces 24 hours later in a surprise re-evaluation, both correlated significantly with the extent to which they were curious about the questions they were focusing on while those faces were being shown to them. This suggests that curiosity is an instrument to the recall of incidental unrelated information, as well as being an instrument to the recall of the answers to one’s questions.

Both of these roles are not yet appreciated in the epistemology literature. There are numerous reasons for this lack of appreciation. For one, the relevant psychological work is relatively new. For another, the epistemological literature on curiosity has simply not yet adequately engaged with extant psychological work, be that work recent or longstanding. And there is a third reason, as well, for the lack of epistemological appreciation of these recollection-centered epistemic roles for curiosity. This third reason consists in the fact that the roles in question don’t involve the simple causation of epistemic goods. Rather, they involve something slightly more complicated: increases in the *amount of time we retain* epistemic goods. Epistemic axiologists do not typically include this sort of thing, this “temporal extent of goods”, in their theories. Plausibly, this is a mistake on their part. Much like moral and prudential value theorists have explicitly built into their own axiologies considerations about the temporal extent of the goods about which they theorize, epistemic value theorists should include in *their* axiologies considerations about the temporal extent of the goods about which *they* theorize.<sup>11</sup> The psychological work I’ve reported here invites us to start doing so.

### C. Incoherence

So far we have seen a role for curiosity in determining the difference between significant and trivial knowledge (and true belief and so on), and we have also seen two underappreciated

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<sup>10</sup> Kang et al (2009: 969).

<sup>11</sup> On temporally enriched axiology see Broome (2004).

instrumental epistemic roles for curiosity: a role in increasing the extent to which we retain knowledge of the answers to our questions, and role in increasing the extent to which we retain knowledge of incidental information. Let me now move on to a third underappreciated instrumental epistemic role that may well be fulfilled by curiosity. This role is an *ameliorative* one; it involves the recognition and removal of things that are epistemically bad. To make a somewhat long story short, what I will suggest here is that curiosity primes us to recognize incoherencies among our beliefs, sustains our focus on those incoherencies, and motivates us to replace those incoherencies with newfound knowledge. If these suggestions are correct, then curiosity has a number of underappreciated epistemic roles in connection with incoherence. Let me now develop these suggestions.

### 1. Initial examples

I'll be discussing some phenomena via which curiosity connects up to incoherence. The best way to start is with some examples; here are three taken from film and television.

#### Example 1: *The Wire*.

In the magnificent television show *The Wire*, Frank Sobotka encounters some financial difficulties and fails to pay his phone bill for three straight months.<sup>12</sup> Despite his failure to pay, his phone service is not disconnected. He is curious about why this is so.

#### Example 2: *L.A. Confidential*

In the film *L.A. Confidential*, police Lieutenant Exley comes to believe that he has solved a crime. After coming to hold this belief, he speaks with one of the key witnesses to the case. The witness recants some of her testimony. Immediately he becomes curious about what really happened.

#### Example 3: *The Truman Show*

Truman, lead character of the film *The Truman Show*, is the subject of a massive illusion. From birth, he has lived in a manufactured town full of hidden cameras and populated by paid actors. All of his activities are filmed and broadcast to the world as a reality TV show. Truman knows nothing of this, thinking instead that he is a normal person surrounded by other normal people. At one point, however, he starts to encounter situations that are quite incoherent with his background beliefs. For instance, he sees a mysterious object fall from the sky; the object looks like a camera. At another point, he is sitting on the beach and it starts to rain. But the rain is just falling in a small circle centered on him. He walks a few feet to the side, and the rain does not immediately follow him. Only a few moments afterwards does the rain circle follow him; and a few moments after that, it begins to rain everywhere. At yet another point, Truman is driving, and his car radio starts emitting very unexpected material including a strange voice saying “wait for the cue”, and “he’s heading west on Stewart, stand by all extras”. Similar things keep happening, a voice on the radio says “change frequencies”, and there follows a loud ring that he hears in the car. The people on the street all hold their ears, as if they heard the ring too. Across this series of situations, Truman gets more and more curious as to what is going on.

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<sup>12</sup> Season 2, episode 8.

In these three fictional examples we find people becoming curious as a result of encountering things that are incoherent with their background beliefs. Frank Sobotka's background beliefs, and in particular his background beliefs about the conditions under which one's phone services are apt to get disconnected, do not cohere with the fact that his own phone has not been disconnected despite his failure to pay his bill for three months. Similarly, Lieutenant Exley's background beliefs (about who committed the crime) fail to cohere with the fact that a key witness has recanted parts of her testimony. And, similarly again, Truman's background beliefs, in particular his background beliefs about being a normal person living in a normal scenario, face a series of deliverances with which they are increasingly incoherent, deliverances ranging from apparent cameras falling from the sky to radio signals as of a crew besetting him with a massive illusion. In each of these cases, we find a close connection between incoherence and curiosity. I am going to formulate a hypothesis about what this connection is, a hypothesis according to which this connection gives curiosity some epistemic value.

## 2. The Berlyne Tradition

Before formulating that hypothesis, though, I am going to point out some relevant work from psychology. There is a tradition of psychological literature on curiosity which runs through the 20<sup>th</sup> century and is still alive and active today. While there is disagreement within this tradition on numerous issues, there is a large measure of agreement about what sorts of things typically cause people to become curious. The work identifying these causes traces back at least to William James, but gets its most influential formulations in the work of Daniel Berlyne, who theorized that there are four main causes of curiosity: novelty, uncertainty, complexity, and conflict. He called these four things the "collative variables". At different points in the development of his views, he offered up a number of different theories of what these variables amounted to, and of what the psychological mechanisms are via which they resulted in curiosity (several of these theories were steeped in the language of "drives" and "arousal", language of a piece with the behaviorism of his day but now largely abandoned by researchers in the area).<sup>13</sup>

A number of theorists responded to Berlyne's work and expanded upon it. These theorists, much like Berlyne himself, explored a number of different accounts of what the collative variables amounted to and what the processes were via which they resulted in curiosity. I'm going to leave the details of these different accounts aside, and focus on the broad shared outlines.<sup>14</sup> And, even within these broad shared outlines, I will discuss only *one* of the four collative variables, namely "conflict". I'll argue that psychological work on this variable suggests an underappreciated epistemic role for curiosity.

Let me start with a few more details about the so-called "conflict" that, according to the tradition rooted in Berlyne's work anyway, often causes people to be curious. This tradition includes work across a number of different paradigms ranging from behaviorism to contemporary social psychology. Across these paradigms we rarely if ever see *definitions* of terms, understood in the classical philosophical way of understanding definitions, namely as noncircular lists of necessary and sufficient conditions that in some sense capture the nature or the essence of the thing

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<sup>13</sup> One mark of this abandonment: in his book-length treatment of the psychology of curiosity, Silvia (2006, 53) asserts that theories involving the notions of drive and arousal are "obviously outdated" and "almost too quaint to criticize".

<sup>14</sup> Illuminating reviews of the relevant literature include Silvia (2006) and Lowenstein (1994).



being defined. While we do find psychologists clarifying what they mean by the term “conflict” in discussions of curiosity, we do not find that sort of philosophical definition of the term.

Instead, we find the notion of conflict identified and clarified in a number of other different ways. Sometimes, for instance, we are given formal mathematical models; other times, nonreductive descriptions; other times still, paradigm examples of things that fall in the term’s extension. The formal models give idealized precise descriptions of the phenomena in question, for instance descriptions using notions from information theory and decision theory.<sup>15</sup> The nonreductive descriptions help give us a fix on the notion at hand while using notions on a par with it. For instance, one pair of theorists in the tradition write that

Information conflict is largely synonymous with the term incongruity; however, it is intended to be somewhat more precise and circumscribed. Information conflict refers to the competing information relative to identifying, labeling, remembering, categorizing, and otherwise encoding the stimulus.<sup>16</sup>

In a similar vein, another theorist tells us that two “sources” of conflict are “expectancy violation” and “perceiving incongruent parts within a whole object”; these claims too are a sort of nonreductive description offered in place of what philosophers would think of as a definition.<sup>17</sup> Finally, and perhaps most usefully, the notion of conflict (as it is used by psychological researchers on curiosity) can be understood by examining paradigm cases of items to which that term is supposed to apply. We can glean a number of these paradigm cases from various experiments in which so-called “conflict” was supposed to be at issue. Items which were used in those experiments and which were taken by the researchers in question to exhibit conflict include the following<sup>18</sup>:

- Pictures of incongruent objects such as an airplane with feathered bird wings
- Expectation-twisting sentences such as “Man baits dog”
- Paradoxical epigrams such as Oscar Wilde’s “The only difference between caprice and life-long passion is that caprice lasts a little longer”
- Self-defeating commands such as “Turn out the lights and bring me my glasses so that I can read”

Each of these four things features the sort of phenomenon that, broadly speaking, epistemologists would call “incoherent”: the sort of phenomenon that consists in one sort or another of representational mental state or body of such states, whose various internal parts do not “fit” together. It also happens to be the phenomenon the Berlyne tradition identifies with “conflict”.<sup>19</sup>

Now, in each of the above four paradigm cases of so-called conflict, the conflicting thing in question tended (in certain influential experiments) to cause people to become curious, where that curiosity was measured via a number of characteristics including facial expression, exploratory behavior, and attention consumption. More generally, the “conflict” which these four things all feature is one of the “collative variables”, that themselves regularly elicit curiosity. At least, there is a tradition (the “Berlyne tradition”) of psychological theorizing according to which this is the case. Summarizing a long and useful discussion of several theoretical proposals from

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<sup>15</sup> For information-theoretic treatments of the collative variables, see Berlyne (1960). For relevant work inspired by behavioral decision theory, see Lowenstein (1994).

<sup>16</sup> Nunnally and Lemond (1973: 167), cf. Silvia (2006: 48).

<sup>17</sup> Silvia (2006: 36).

<sup>18</sup> This list is taken from Silvia (2006, 48).

<sup>19</sup> For epistemological discussions of coherence, construed in something like the broad way I am construing it here, see Kvanvig and Riggs (1992), Elgin (2005), and Whitcomb et al (2017).

this tradition, Silvia (who uses the terms “curiosity” and “interest” interchangeably, as do most theorists in the tradition) writes:

Most theories proposed Berlyne’s family of collative variables – conflict, uncertainty, novelty, and complexity – or something like them, such as information conflict (Nunnally, 1981) or information gaps (Lowenstein, 1994). This convergence reflects the strong empirical support for the effects of collative variables on interest. Their effects generalize across types of measurement (self-reports; behavioral measures of exploration, choice, and attention; physiological measures), types of samples (human infants, children, and adults; nonhuman animals), types of stimuli (paintings, text, movie sequences, music, physical activities, randomly generated images), types of research designs (correlational ratings, manipulation of the collative variables), and different cultures.<sup>20</sup>

To summarize so far: numerous fictional examples seem to feature some sort of connection between curiosity and incoherence; moreover, a long tradition in psychology recognizes some such connection as well, where the most common term used for incoherence is “conflict”. What I want to do next is to explore this connection from an epistemic point of view. The exploration will lead to a certain hypothesis: namely, that curiosity *primes* us to recognize incoherence, *sustains* our focus on that incoherence, and *motivates* us to expunge that incoherence.

### 3. The PSM Model

The first part of my hypothesis is that curiosity primes us to recognize incoherence. In order to understand this thought, we must appreciate a certain distinction. This is the distinction between the *trait* that is curiosity (i.e. the trait the having of which amounts to one’s being a curious person), and *episodes* of curiosity (i.e. the things that come into existence when one gets curious about something and go out of existence when one stops being curious about that thing). Call the former “trait curiosity” and the latter “episodic curiosity”.

Both of these forms of curiosity may well play important roles in the recognition of incoherence among one’s mental states. However, we should be careful about which roles are played by which. For instance, we should *not* say: episodic curiosity causes us to recognize incoherence. It does *not* on its face seem plausible that Frank Sobotka first becomes curious as to why his phone bill has not been shut off, and then later as an effect of this curiosity recognizes that it is has not been shut off despite his failure to pay the bill. Nor does it seem plausible on its face that detective Exley first becomes curious about whether the case was solved correctly, and later as an effect of this curiosity comes to recognize that a witness recanted her testimony. Nor does it seem plausible on its face that Truman first becomes curious about what is going on around him, and later as an effect of this curiosity notices strange conspiracy-invoking sounds on the radio. In each of these cases a more plausible view, at least at first pass, is that the causal arrows point the opposite direction. Truman, Exley, and Sobotka become episodically curious as a result of recognizing the incoherencies at issue; they don’t recognize those incoherencies as a result of being episodically curious. And similarly, to the extent that these fictional examples capture a common psychological phenomenon, with real people in real life.<sup>21</sup>

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<sup>20</sup> Silvia (2006, 53). On Silvia’s own view it is not the collative variables themselves, but rather our *appraisals* of whether things instantiate those variables, that are the typical causes of (episodic) curiosity.

<sup>21</sup> Compare Schmitt and Lahroodi (2008: 133): “...curiosity does not fix our *first* attention on an object: curiosity arises from attention rather than the other way around”.

Of course, there may well be somewhat more complicated mechanisms via which certain causal arrows *do* run from episodic curiosity to incoherence recognition. For instance, there may be feedback loops through which episodic curiosity and incoherence recognition are mutually reinforcing. Perhaps it happens, commonly or typically even, that one recognizes incoherencies, and this recognition causes one to be episodically curious, and this episodic curiosity causes one to recognize further incoherencies, which recognitions themselves bring further episodic curiosity still, and so on again and again. It seems plausible, at least on its face, that some such feedback loop story might be correct.<sup>22</sup> What does *not* seem plausible on its face is the much simpler story according to which the causal arrows between episodic curiosity and incongruence-recognition unidirectionally lead from the former to the latter.

In seeing this simple story to be implausible, we also see to be implausible a corresponding simple story about the epistemic value of curiosity insofar as curiosity connects to incoherence. On that simple story, the epistemic value curiosity gets from its relationship to incoherence is a simple sort of instrumental value: much like eyes are valuable instrumentally because they cause one to see things, curiosity is epistemically valuable instrumentally because it, or more exactly its episodic variety, causes one to recognize incoherence. Since this simple epistemological story invokes an implausible account of the causal relationships between curiosity and incoherence-recognition, we must look elsewhere to find epistemic value in the curiosity-incoherence connection.

But where else should we look? Well, keeping in mind the distinction between episodic curiosity and trait curiosity, we can look to some particular experiments from the Berlyne tradition. In a useful overview of that tradition, Lowenstein (1994) recounts an experiment by Maw and Maw (1972) in which the researchers constructed a composite measure of the extent to which grade school students were curious people, that is to say, the extent to which these students were trait-curious. After using this composite measure to estimate the extent to which each of the students in a classroom was trait-curious, Maw and Maw presented a number of statements to each student. Some of the statements were the sort of ordinary, nondescript fare one hears every day. Other statements were “verbal absurdities” such as the command “Give me my glasses and turn out the light so I can read the newspaper”.

Now, some of the students recognized these absurdities, while others did not. Interestingly, the more curious students recognized them more often. Even more interestingly, this relationship remained even after matching subjects by IQ. Summarizing this work, Lowenstein (1994: 79) writes:

Maw and Maw 1972 found that a composite measure of curiosity correlated significantly with students’ ability to recognize verbal absurdities such as ‘Give me my glasses and turn out the light so I can read the newspaper’, even after matching subjects by IQ.

Taking a cue from this work, we can make progress on the epistemic value of curiosity *vis a vis* incoherence. Instead of conjecturing that episodic curiosity causes us to recognize incoherence, I want to conjecture that *trait-curiosity* does as much. In particular, I want to conjecture that trait curiosity *primes* one to recognize incoherence. The “priming” here is a causal relationship via which trait curiosity in some sense sets the stage for recognizing incoherence, making this

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<sup>22</sup> There is some empirical evidence suggesting that some such feedback loop story is correct; see Kashdan (2004: 138-139). Also compare Schmitt and Lahroodi (2008: 129): “...curiosity requires a mutually supportive drawing of attention and desire to know: one desires to know because one’s attention is drawn, and one’s attention continues to be drawn because one desires to know.”

recognition more apt to happen. Just as priming (say) an lawnmower engine makes that engine more apt to start when one pulls the lawnmower's cord, being a curious person makes one more apt to recognize incoherence when one is confronted with it. This conjecture, that trait curiosity primes one to recognize incoherence, makes sense of the Maw and Maw study.

It also puts us on the path to making sense of how it is that curiosity and incoherence connect in our three fictional examples involving Sobotka, Truman, and Exley. While the episodes of curiosity these characters undergo do not themselves cause the characters to recognize incoherence, their *trait* curiosity does play a causal role in bringing about this recognition, a role that consists in priming them for it. If they were wholly, completely incurious people they would be less likely to notice the relevant incoherencies. To be sure, they would sometimes still notice them, just as lawnmower engines sometimes start without being primed. But the priming makes the result more likely, causally operating to help bring it about.

In virtue of making people more likely to notice incoherence, trait curiosity possess some epistemic value. This is an underappreciated source of epistemic value for curiosity, a source that comes into relief when we reflect on the various fictional examples above and on the psychological tradition according to which one of the typical causes of episodic curiosity is "conflict".

Leaving this newfound epistemic value of trait curiosity to the side, we can ask: does *episodic* curiosity *also* get some epistemic value from its relationship to incoherence? Not in the simple and straightforward way of being an instrument that causes us to recognize incoherence; for, again, it seems more *prima facie* plausible that the causal arrows point in the other direction, with incoherence-recognition causing episodic curiosity and not the other way around.

Nonetheless, there may be important ways in which episodic curiosity does get some epistemic value from its relationship to incoherence. Perhaps we can make progress here by drawing on recent work by Michael Brady on the epistemic role of emotions.<sup>23</sup> According to Brady, one central epistemic role of emotions is to capture and consume our attention, focusing that attention on important matters. To illustrate this view, imagine that you are walking around in the woods, and that you see a snake, and that this makes you become afraid. One key role for this fear, according to Brady, is to focus your attention upon the danger at hand. This focus helps you cope with the danger at hand, for instance by helping you quickly and efficiently choose whether to fight or flee, instead of (for instance) being distracted by whatever thing next comes into your visual field and as a result forgetting about the snake.

Perhaps the relationship between episodic curiosity and incoherence is (in some ways) similar to the relationship between fear and danger. Fear focuses us on dangers once we recognize them, and helps sustain that focus while we try to avoid them. Similarly, perhaps, episodic curiosity focuses us on incoherencies, and sustains that focus while we try to remove those incoherencies from our doxastic corpuses. Sherlock Holmes is curious as to who committed the crime, and his focus on the matter is unwavering; bored teenagers forced to read Sherlock Holmes stories are *not* curious on who committed the crime, and their focus on the matter is *not* unwavering. Plausibly, it is no accident that the curiosity goes with the focus and the lack of curiosity goes with the lack of focus. For, plausibly, (episodic) curiosity *sustains* one's focus.<sup>24</sup>

What is the nature of this "sustains" relationship? Perhaps it is a sort of causal relationship, so that episodic curiosity is one thing, and one's focus is another thing, and the former thing causes the latter thing to remain on the scene once it is there. Or perhaps this sustaining role is in some sense more constitutive, so that instead of *causing* us to stay focused, episodic curiosity *is* a sort

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<sup>23</sup> Brady (2013).

<sup>24</sup> This idea was anticipated by Hume (1740/2003: 286-290).

of focus, or is one of a number of states that *jointly taken together* amount to focus. Whatever exactly is the nature of the “sustaining” relationship at work here, episodic curiosity seems to have some epistemic value in virtue of sustaining our focus on incoherence.<sup>25</sup>

Moreover, this particular sustained focus on incoherence motivates us to come to possess new knowledge, as it motivates us to get to the bottom of the incoherencies in question. Thus, for example, in *The Wire* Frank Sobotka learns it is *because his account is “flagged”* that his phone has not been shut off. While this new item of knowledge brings its own new questions for Sobotka to deal with, *it is a new item of knowledge*, and moreover a new item of knowledge whose addition to his doxastic corpus removes (or at least diminishes) the incoherence among his beliefs involving his phone. Similarly, in *LA Confidential*, Lieutenant Exley comes to learn that the crime in question was not committed by the people he originally thought committed it. Again, this is a new item of knowledge; and its addition to his doxastic corpus removes (or at least diminishes) the incoherence among the relevant beliefs, here Exley’s beliefs about who committed the crime and who recanted her testimony. Similarly again, in *The Truman Show*, Truman eventually learns that he has been for his whole life the subject of an elaborate staged reality TV show. This is a new item of knowledge. Moreover, its addition to Truman’s doxastic corpus removes or at least diminishes the incoherence among his beliefs about whether cameras were falling from the sky and whether he was a normal person living in the normal world. In each case we see a pattern: incoherence causes episodic curiosity (perhaps with the help of priming via trait curiosity), this episodic curiosity involves a motivation to learn new facts, and the learning of these new facts removes the incoherence. In short, episodic curiosity motivates us to replace incoherent beliefs with knowledge.

Of course, the process does not always work out. Sometimes people don’t recognize the incoherencies among their beliefs. Sometimes the recognition at hand is short-lived, quickly exiting from one’s focus and being replaced by something else. Sometimes one’s curiosity remains without ever being resolved. Sometimes one’s curiosity goes away when it shouldn’t because it *merely seems* to get sated, as it does (for instance) when one thinks one has come to learn the truth but in fact one’s beliefs are false.<sup>26</sup> In all of these cases, all of which no doubt happen frequently, episodic curiosity fails to replace incoherent beliefs with knowledge: the process doesn’t work out. But in other cases it *does* work out, and episodic curiosity *does* replace incoherence with knowledge. These sorts of cases reveal a source of epistemic value for curiosity, and in particular for episodic curiosity, in its relationship to incoherence.

So I think that episodic curiosity, as well as trait curiosity, gets some epistemic value from its relationship to incoherence. With trait curiosity, the epistemic value comes from the fact that the trait in question *primes* us to recognize the incoherence in question, and that this recognition itself is something of epistemic value. With episodic curiosity, the value comes from the fact that incoherence, or at least our recognition of it, causes us to be episodically curious, and that the resulting episodic curiosity *sustains* our focus on the incoherence at hand. This focus itself has some epistemic value, both in virtue of its keeping incoherence within our gaze, and in virtue of its helping us replace that incoherence with newfound knowledge (when the process works, that is).

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<sup>25</sup> If the “sustaining” in question is constitutive instead of causal, then the value in question amounts to what is sometimes called “contributory” value as opposed to “instrumental” value. See Harman (2000: 143-145).

<sup>26</sup> There is a standing debate on what it takes for one’s curiosity to be sated. See Kvanvig (2003: 140-155), Schmitt and Lahroodi (2008: 133-134), Whitcomb (2010), Inan (2012: 136-147), and Kvanvig (2012).

We might summarize this set of views by calling it *the PSM model*. According to this model, curiosity primes, sustains, and motivates: trait curiosity *primes* us to recognize incoherence, while the episodic curiosity caused by this recognition *sustains* our focus on it and *motivates* us to replace it with newfound knowledge.<sup>27</sup>

While the PSM model fits together nicely with some psychological work on so-called conflict and with our three fictional examples, it is of course highly speculative. It is very, very difficult to fully establish adequate causal models of mental phenomena. I make no claim to have done as much here with the PSM model of curiosity, or even to have come close. Nonetheless, I do think that the model does a good enough job, at stitching together enough material, that it is worth exploring as a theoretical conjecture. I will close the paper by highlighting a few of the ways in which this model is noncommittal; one way to further develop the model would be to add commitments at these particular junctures.

One way in which the PSM model is noncommittal is this: it is noncommittal about the *modal status* of the causal connections it invokes. Could it in principle have turned out that people have trait curiosity and episodic curiosity, and yet these things did not causally connect to incoherence in the ways conjectured by the PSM model? Could this in principle have happened, given whatever (if any) laws of nature there are that actually govern the workings of the human mind? Could it in principle have happened with psychologically well-functioning people given the existence of such laws? In short: are the causal connections of the PSM model metaphysically necessary, or psychologically necessary, or psychologically necessary for well-functioning people? Are they necessary in none of these ways, and instead deeply contingent, even in some sense just a coincidence? The PSM model is completely silent on these issues; it does not answer any of these questions either affirmatively or negatively. It simply asserts that certain causal connections obtain, and it leaves the modal status of those connections open.

Now to a second way in which the PSM model is noncommittal: it is noncommittal about the extent to which, when curiosity drives us to focus on incoherence, we conceptualize this incoherence *as* incoherence. Let me explain. Contrast two people focusing on a chessboard, one of whom knows it is a chessboard and the other of whom has never heard of chessboards. While both of these people might focus on the chessboard, only one of them conceptualizes it *as* a chessboard. (Compare: two people focus on a rabbit-duck, while only one of them conceptualizes it as a rabbit). The notion of *conceptualizing as* here applies to incoherence as well as applying to chessboards (and rabbit-ducks). On the one hand, there is the phenomenon of focusing on incoherence conceptualized as incoherence; on the other hand, there is the phenomenon of focusing on incoherence without conceptualizing it as incoherence, much like the person who has never heard of chessboards can focus on a chessboard without conceptualizing it as a chessboard.

Which of these sorts of focus is at work in the curiosity-driven focus on incoherence conjectured by the PSM model? Does trait-curiosity prime us to focus on incoherence *conceptualized as* incoherence, or to focus on it *without* conceptualizing it as incoherence? Or is it sometimes one way and sometimes the other way? The PSM model is silent on these issues, just as it is silent on the modal status of its conjectured causal connections.

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<sup>27</sup> In addition to being inspired by Brady (2013) and the tradition following Berlyne, the PSM model is also inspired by Schmitt and Lahroodi (2008). They write that curiosity “drives us to eliminate cognitive conflict” (132) and that “Curiosity requires that the drawing of attention and the desire to know be causally related....the desire results from the attention; and the attention is sustained by the desire...the fact that the desire to know is sustained by attention enhances the chance that the desire will be satisfied” (129, 137).

As it happens, there is some reason to believe that the focus at issue is not always a focus in which one conceptualizes the incoherence as incoherence. In particular, children focus on so-called conflict quickly and spontaneously from a very early age, an age at which they may well not yet possess the concepts of conflict or incoherence.<sup>28</sup> But the PSM model is not wedded to any views about these issues, just as it is not wedded to any views about the modal statuses of its conjectured causal connections.

These two loci of noncommitment yield two possible directions for future research. The PSM might be further developed by investigating the modal statuses of the priming and sustaining and motivating connections it conjectures to be at work; and it might also be further developed by investigating the extent to which the incoherence it involves is conceptualized as such by the people whose curiosities it describes.<sup>29</sup>

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<sup>28</sup> McCall, Kennedy, and Applebaum (1977), cf. Silvia 2006: 36.

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