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Virtue Epistemology
Naturalized

Bridges Between Virtue Epistemology
and Philosophy of Science

 Springer

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Bridges Between Virtue Epistemology and Philosophy of Science

Abrol Fairweather

The essays collected here seek to establish bridges between virtue epistemology and philosophy of science (broadly construed, including the history of science, the use of specific scientific results to construct naturalistic philosophical theories, formal epistemology, modeling, theory choice, etc.). Since Ernest Sosa's ground breaking essay "The Raft and the Pyramid" (1980) and Linda Zagzebski's *Virtues of The Mind* (1996), epistemologists have become increasingly interested in the normative aspects of knowledge, justification, understanding and other epistemic states. Virtue epistemologists ground our evaluation of human cognition in a general commitment to aretaic (or virtue theoretic), rather than deontological or consequentialist norms.¹ Two broad defining features of virtue epistemology are often understood through the following principles: (a) Knowledge and other important epistemic concepts are essentially normative and (b) epistemically valuable states of agents confer epistemically valuable properties on their beliefs, not the other way around.² Virtue epistemology thus borrows liberally from the rich tradition in virtue ethics for a range of normative resources that have proven quite useful for epistemologists interested in addressing traditional problems regarding epistemic luck and epistemic value. While much more will be said about virtue epistemology below, and there are indeed many species of virtue epistemology on offer in contemporary literature, what unifies this movement can fruitfully be seen through the unique way virtue

¹This is not to suggest that overtly normative epistemology was not happening prior to Sosa and Zagzebski's work, as Roderick Firth (1978) and Roderick Chisholm had nicely articulated to rule-consequentialist structure of reliabilist theories and the deontological structure of internalist theories respectively.

²The second commitment is typically described as 'reversing the direction of analysis' for terms of epistemic appraisal.

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Curiosity, Belief and Acquaintance

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Philosophers have paid little attention to curiosity until quite recently. There is now at least a scarce literature that discusses how curiosity relates to certain intellectual traits that we value such as inquisitiveness and open-mindedness, whether it is an essential instrument to lead us to certain epistemic achievements such as the acquisition of truth or knowledge, whether being curious is an intellectual, an ethical, or even a moral virtue, and whether curiosity is required for a good life.¹ Most of this discussion takes place in an area where epistemology overlaps with ethics and value theory, generally known as virtue epistemology. Whether curiosity is taken to be a form of virtue or not, it should be clear that there are important connections between being curious and some of our basic epistemic attitudes and achievements. Knowing, for instance, is an epistemic achievement, at least in certain cases, and curiosity is one of its basic motivators. The question of how curiosity and knowledge are related brings about a host of interesting philosophical issues, the most important of which relates to what curiosity is.² After all the classical “definition” equates curiosity with a desire to know. There is then the important comparative logical question: If knowledge is a propositional attitude, is curiosity so too? There are also issues concerning how curiosity relates not to knowledge, but rather its

¹See Daston and Park (2001), Baumgarten (2001), Kvanvig (2003), Miscevic (2007), Schmitt and Lahroodi (2008), Brady (2009), Subasi (2009), Yigit (2011). Apart from this literature there has been very little discussion on some of the basic philosophical questions concerning curiosity, such as what curiosity is, what makes it possible, how it is satisfied etc. See Kvanvig (2003) and especially Whitcomb (2010). Though not directly on curiosity there is also some current relevant research on open-mindedness, inquisitiveness, love of truth and related issues: see Zagzebski (1996), Hookway (2003), Battaly (2008), Roberts and Wood (2009), Riggs (2010), Crisp (2010), Baehr (2011).

²I am inclined to think that curiosity based knowledge has more value than what might be called “accidental” knowledge. If so this should provide good reason for virtue epistemologists to address philosophical questions on curiosity.

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opposite, namely ignorance. What are the mental mechanisms we employ which allow us to become aware of our ignorance on a particular issue, and how does this motivate curiosity? Is awareness of ignorance a precondition for curiosity? There are also related issues that concern how curiosity relates to the asking of a question. If all knowing is in fact knowing the answer to a question, does it then follow that knowledge always originates from curiosity?³ How does our curiosity relate to the asking of a question, and how does the satisfaction of our curiosity relate to the answering of our question? How does curiosity motivate inquiry into the unknown? I have dealt with these and other related issues in detail in recent work.⁴ Based on some of the ideas developed there, I now wish to elaborate on topics which should be relevant not just to virtue epistemology, but to epistemology in general, and especially to formal epistemology. These involve how curiosity relates to some of our basic epistemic attitudes that come short of knowledge. Among them two stand out as being the most relevant, that is *belief* and *acquaintance*. How does curiosity relate to the holding of a belief that is uncertain and how does it relate to having partial acquaintance with an object?

Plenty of work has been done on *belief*, very little work has been done on *curiosity*, and to my knowledge there is no work, at least in the philosophy literature, that explicitly addresses the issue of how the two are related. To start off we may say that if you have a belief that is too firm, then there will be no room left for curiosity. If you are certain that Plato was a philosopher for instance, then you cannot be curious whether that really was or was not the case. Curiosity about whether a proposition is true or false can only take place under uncertainty. Here the notion of *certainty* should be taken in the “subjective” sense. It has to do with the epistemic attitude the subject takes with respect to the truth of a proposition. Being certain, in this sense, corresponds to maximum strength of a belief. Once that level is reached genuine curiosity becomes impossible. This is not a normative notion, rather it describes the mental state one is in. Being subjectively certain is not a factive mental state; that is a person may be subjectively certain that a given proposition is true, when in fact that proposition is false. If an ancient was certain that the world is flat, then he could not have been curious about whether this was or was not in fact the case. People who are certain of their beliefs may not always have the right to be certain. The evidence they have may not entitle them to be certain, but they still may. That is why people who dogmatically hold beliefs cannot bring themselves to be curious about their beliefs without giving up their dogmatism. Fortunately, not everyone is like this. There are many rational open-minded people who hold beliefs without feeling certain that those beliefs are true. The stronger your belief gets the less possible it becomes to be curious. So it does appear that curiosity is inversely propositional to the strength of one’s belief, or what in the Formal Epistemology literature is called “degree of belief”.⁵ This is a particularly interesting notion that

³ Schaffer (2007) explicitly defends the view that knowing is always knowing the answer to a question; some of Collingwood’s (1940) ideas seem to imply it. I argue against this view in Inan (2012); see especially p.147.

⁴ See Inan (2012).

⁵ For recent work on *degrees of belief* see Huber and Schmidt-Petri (2009).

connects epistemology with other branches of philosophy, as well other scientific disciplines. That is because the degree of our belief in the truth of a proposition partially determines how we are inclined to act, as well as how we ought act in a given context. It is a central notion concerning the norms of rationality, and it is an essential concept to be utilized in our attempts to explain and model the human mind. Now just like belief, curiosity also comes in degrees. The degree of one’s curiosity is one of the parameters that determines the strength of one’s motivation to learn something new. It is an instance of one of the “passions of the soul”,⁶ as Descartes called it, which motivates inquiry. Understanding the epistemic features of the human mind, both descriptively and normatively should then require us to take into consideration curiosity. Once we integrate the notion of *curiosity* into the formal epistemology literature we will have a better chance of understanding and in effect modeling the human mind.

We enjoy curiosity partially because we are fallible beings. The evidence we have for most of our beliefs about the external world, and perhaps even for some of our beliefs about our own minds, do not guarantee that those beliefs are true. Merely the fact that we are fallible beings however is not sufficient to explain our curiosity. Curiosity can only take place when we come to realize the fallibility of our beliefs. It requires open-mindedness. And this can only take place in the absence of certainty. That is why utterances in the form “I am certain that p, but I am still curious whether p” can never express truths. Anything short of subjective certainty should then allow some room for curiosity. Even if you know that it is extremely improbable that a belief you hold might turn out to be false, you may still be curious about it. If you have a lottery ticket which you know that its chances of winning the big prize is extremely slim, you may still be curious as to whether it will. In fact people who buy lottery tickets find the motivation to check the winning numbers which indicates that they are in fact curious as to whether their ticket won. The more interesting fact is that you may be curious whether your ticket will win even if you believe that it will not. That is, utterances in the form “I believe that p, but I am curious whether p” are fine, and in fact express truths in certain contexts. Curiosity, at least in one of its forms, has to do with how much evidence one has for the truth of a proposition, and whether one takes that evidence as being conclusive: the less evidence there is, the more room for curiosity. Curiosity would then seem to have the potential of being maximized when there is no evidence on either side. I have access to no evidence for or against the truth of the proposition that there is intelligent life on other planets. I neither believe nor disbelieve it, and, of course, I am extremely curious about it. It would seem then that such cases of suspension of belief are ones which have the potential to maximize the degree of one’s curiosity. So then, it initially appears as if the stronger one’s belief gets the weaker the curiosity will become. Going back to the lottery case, suppose you pay one dollar for a lottery

⁶ There are six primitive passions of the soul according to Descartes (1989). Among them is wonder (“admiration” in the original French) which is a “sudden surprise of the soul”. Curiosity on the other hand is only a sub-species of another primitive passion, namely desire, and it is explicitly defined as “desire to understand” by Descartes.

ticket and will collect one million dollars if you win where your chances of winning is one in a million. Now you may be curious as to whether you will win, though the strength of your curiosity under normal circumstances would not be too high. That is because the degree of your belief that you will win is close to zero. But if you played another game which had the same stakes, but very different odds things would appear to be different. Suppose you again bet one dollar, and then we flip a fair coin, and if it is heads you win a million dollars and if it is tails you win nothing. All else being equal, my hypothesis is that you would be a lot more curious as to whether you will win in this case compared to the lottery case. That is because, all else being equal, your degree of belief in the same proposition is now raised to the "medium" value, mostly represented as 0.5 in the $[0, 1]$ interval. If we raised the odds so that this time the chances of you *not winning* is one in a million, the degree of your curiosity will go down once again, all else being equal. This appears to show that the degree of curiosity is inversely proportional to the degree of belief. Now some may object to this by pointing out that at times as the degree of belief goes higher so does one's curiosity. Suppose that after investigating the crime scene, Holmes becomes curious who the murderer is. Initially there are no suspects, but then Holmes finds good evidence that a certain Ralph, whom he knows from an earlier case, might be the murderer. He may in fact come to believe, but not know that Ralph is the murderer. Initially Ralph was not on Holmes' suspects list, there was no evidence to tie him with the murder. We may assume that at this stage the degree of Holmes' belief in the proposition that Ralph is the murderer was 0.5. Nonetheless Holmes may not have been curious whether Ralph is the murderer. But then soon as he collects new evidence that makes Ralph a suspect, Holmes' degree of belief of the proposition that Ralph is the murderer now has come to be quite high. So the degree of belief has increased significantly, but contrary to what I said earlier, we may easily imagine that Holmes has now become curious whether Ralph is in fact the murderer. So then it might seem in this case that the degree of one's curiosity increases with the increase in the degree of belief. And then this will go on until the peak is reached, that is until the subject feels certain that he now knows the proposition in question or its negation. So under this account, Holmes' degree of curiosity will increase as he gathers more evidence that Ralph is the murderer; and once he comes to know that Ralph is or is not the murderer, then he will no longer be curious and the degree of his curiosity will suddenly drop to 0. This I believe is not fully accurate. When there was no evidence for or against the claim that Ralph is the murderer Holmes was not curious whether he was the one. Holmes became curious soon as he found some evidence which made Ralph a suspect. The earlier claim was that the degree of curiosity decreases as the degree of belief increases, all else being equal. What is important to note is that in Holmes' case not all else is equal. That is because at times new evidence may also increase our *interest*. Curiosity is not merely related to our degree of belief, there is another important parameter involved, namely our interest in the object of our curiosity. Initially Holmes was not interested in Ralph, or to be more precise he was not interested in the truth of the proposition that Ralph is the murderer. After collecting evidence making Ralph a suspect, Holmes then became interested. The issue of how interest

and belief relate to one another is a tough one, but at least how interest relates to curiosity should be quite clear: the degree of curiosity is directly proportional to the degree of interest.

As I said anything short of complete certainty allows for curiosity.⁷ This of course does not imply that we are curious about the truth of just any old proposition we entertain in our minds of which we are not certain. The proposition that the number of words in the finished version of this article will be odd is not one that I have any evidence for or against. I am not even sure whether it has a determinate truth value. My degree of belief is 0.5, meaning that it is not even a belief that I hold. And not only do I not hold a belief one way or another, I am simply not interested in the issue. It makes no difference for me, or anyone else for that matter, whether the number of words turns out to be even or odd in this article. If the editors of this issue had developed a weird policy of publishing only those articles containing odd number of words, I might have had an interest in the topic. As it stands I don't. There are also many beliefs we in fact do hold, in which we again have no interest. After hearing the weather forecast, say just by accident, suppose you come to believe that it will rain today; yet you may not be curious whether it will or it will not rain today. You may simply not be interested in the topic. Lack of certainty only when accompanied with interest motivates curiosity. This is why you may hold two separate beliefs having the same degree, though you may be curious about the truth of one, and not the other, or you may be curious about both, but with different degrees. For instance, normally one's curiosity about something as trivial as the solution to a logic puzzle will not be as strong as one's curiosity about something as vital as the result of a critical medical exam. That is because under normal circumstances we care about our health more than we care about the solution to a puzzle and therefore we have more interest in the former. The degree of one's curiosity is fundamentally linked with one's interests in general, and, as said earlier, it is directly proportional to the degree of interest in the truth of the proposition one is curious about. Just like belief and curiosity, interest also comes in degrees; the higher it gets the more room there is for curiosity. Overall we might then conclude that for any subject and a proposition that that subject grasps, the degree of curiosity in the truth of that proposition will be inversely proportional to the degree of belief in the truth of that proposition, but it will be directly proportional to the degree of interest in the truth of that proposition. That of course does not tell us how exactly these three parameters relate to one another, but it at least tells us that these are the parameters to consider. If interest and belief were independent attitudes, then there would have been a simple equation that connects them with curiosity. However they are not independent attitudes. In fact interest interacts

⁷I hold that one can even be curious about something he or she knows, as long as that piece of knowledge is fallible and thus not certain in the subjective sense. Though an utterance such as "I know that the world population is greater than seven billion, but I am not certain that this is the case and I am still curious whether it is so" does seem somewhat odd, it may very well express a truth. Given that this would appear to be a controversial issue, I do not pursue it here since my current focus is merely on how curiosity relates to belief.

with belief in its own peculiar way, and without further inquiry into this interaction we should not jump to any conclusion. It would for instance be wrong to conclude that the degree of interest in the truth of a proposition is directly proportional to the degree of belief in the truth of that proposition. One may lack interest in the truth of a proposition regardless of whether he or she has any evidence for it. Whether the number of words in this article is odd is an issue I have no interest in, and that is totally independent of my degree of belief in the truth of this proposition. Therefore we should conclude that the reason why Holmes becomes more interested in whether Ralph is the murderer soon as he collects new evidence making him a suspect, cannot be merely due to the increase of his degree of belief. We should have to bring into consideration Holmes' interest in *who the murderer is* in order to explain the increase of his interest in whether Ralph is the murderer when he gathers new evidence making him a suspect. The most that can be said here is that the degree of one's curiosity is a function of his degree of belief and his degree of interest when there is a full proposition involved.

The preceding discussion is applicable only to curiosity which has propositional content. That is not always the case. To see this, we should distinguish between two types of curiosity. If you are curious about whether there is life on other planets, your curiosity has propositional content: you wish to know the truth value of the proposition that there is life on other planets.⁸ But if you are curious about what Plato's father's name was, then there is no proposition you can single out as one whose truth value you are seeking. Or when Holmes is curious who the murderer is when he has no suspects, there is no particular proposition in the form [a is the murderer] of which Holmes is curious to know. So my hypothesis is that being curious who someone is, or being curious when or where or how or why some event took place need not involve curiosity in the truth of a proposition. Though this distinction between two types of curiosity is far from being commonplace in philosophy or any other discipline, the corresponding distinction between two types of questions was made more than a couple of millennia ago. Aristotle famously distinguished between "whether-questions" that ask for whether there is a "middle term" and "what-questions" that ask for what that middle term is.⁹ Today many distinguish between direct and indirect questions, where the former admit of "yes" or "no" as answers, but the latter, which are also known as "wh-questions", do not.¹⁰ If we assume that the use of interrogative sentences is our normal linguistic tool by which we express our curiosity, then we should expect that there are two types of curiosity as well. I will call curiosity expressible by a direct question "propositional curiosity", and

⁸This is in fact an oversimplification. At times we wish to know more than just the truth value of the proposition in question; we wish to know the fact that makes the proposition true. That is why I hold that there are two ways of satisfying propositional curiosity, *de re* and *de dicto*. For a discussion of this see *Chapter 2 Asking and Answering*, and *Chapter 9 Conditions for the Satisfaction of Curiosity* in Inan (2012).

⁹Aristotle (1924), *Posterior Analytics, Book II, Chapter 1*, p.50.

¹⁰In contemporary philosophy the distinction was made by a number of philosophers. An early version can be found in Leonard (1957).

curiosity expressible by an indirect question "objectual curiosity". So even if we gave a satisfactory account of how degree of belief and propositional curiosity relate to one other, that will not be sufficient. We will have to account for objectual curiosity as well which cannot be reduced to a propositional attitude. This will require us to introduce at least one new epistemic parameter into our equation. The moral to be drawn from all this is that our epistemic attitudes which motivate us to act are not merely limited to the strengths of our beliefs and interests. We are intellectually a bit more complicated than that.

So I take it that propositional curiosity is what is expressible by a question in the form "is it the case that s?" where s is a full declarative sentence that expresses a proposition. If we further assume that truth and falsity are properties of propositions, then the object of propositional curiosity will be an unknown truth value. If we put this in terms of a *desire to know*, then we may say that in such cases the curious subject desires to know which of the two truth values a proposition has. In this sense we may take this form of curiosity as a propositional attitude of a peculiar kind. This is not the case though for objectual curiosity, i.e. curiosity that is expressible by a wh-question. In such cases it is not that the degree of belief together with the degree of interest are not sufficient to account for curiosity. Rather in these cases the notion of *degree of belief* is no longer applicable. That is because objectual curiosity is not propositional. In other words being objectually curious is not a propositional attitude. We can no longer account for curiosity in terms of belief, given that there is no such thing as "objectual" belief. The difference between the logical status of belief and objectual curiosity reveals itself in surface grammar. Sentences in the form "S is curious about the F" are perfect constructions and are in fact used quite frequently, but there is no analogous construction for belief. When Holmes asks "who is the murderer of Smith?" out of curiosity, we may take that to mean that he is curious about the murderer of Smith. So "Holmes is curious about the murderer of Smith" expresses a truth, but "Holmes believes about the murderer of Smith" is ungrammatical. (There is of course one specific use of the verb *to believe* in which we say things like "Holmes believes John" and we might even say "Holmes believes the murderer", but that is obviously not an objectual attitude.) When we say that Holmes' curiosity is not propositional we do not wish to say merely that the interrogative sentence that he uses does not contain a full proposition. The claim is in fact a lot stronger than that. What we wish to say is that we cannot single out any proposition of which Holmes wishes to know whether it is true or false. There simply is no such proposition. Now some may perhaps wish to say that there is at least a certain long disjunctive proposition in which each disjunct is a possible answer to the question. This long disjunction may be along the lines of "Ralph is the murderer of Smith or Brown is the murderer of Smith or ...". And then we may say that Holmes wishes to know which disjunct is true. Now this might be true in certain cases. If Holmes has, say, four possible suspects, and he knows that the murderer is among them, then he may have at his disposal a disjunction with four disjuncts. But that is on the assumption that Holmes has certain suspects to form the disjunction. What if he is totally in the dark about the identity of the murderer? It might simply be the case that the murderer is totally unknown to Holmes and neither his name nor

any other information about him appears in any of Holmes' files. He has no actual suspects, and not even possible ones. Nevertheless Holmes is curious who the murderer is. Regardless of whether Holmes has suspects or not, it is important to notice here that being curious about who the murderer is, is not the same thing as being curious about which disjunct is true in a disjunction. If we can formulate a disjunction with all the possible answers to the question appearing as separate disjuncts, then it should be clear that Holmes cannot grasp this very long proposition. Of course Holmes knows very well what he is curious about; that is, *being curious* is a mental state, and Holmes has access to it. So given that he cannot single out a certain proposition that he grasps as giving the content of his curiosity, we should conclude that his curiosity does not have propositional content. It is of course true that if Ralph is the murderer and Holmes comes to know this, then his curiosity will be satisfied. But that does not imply at all that Holmes was curious about whether Ralph was the murderer. He may have never heard of Ralph before, and no information may have been available to him about Ralph initially when he was curious about the murderer. It is one thing to be curious about whether Ralph is the murderer, it is another to be curious about who the murderer is; the former is propositional the latter is not. I hold that these are very different mental states. Objectual curiosity is not propositional nor can be reduced to it.

Now even if you are convinced that objectual curiosity is not propositional, you may be inclined to think that at least its satisfaction is propositional. If Holmes is curious about the murderer, and Ralph is the one, then once Holmes comes to know that Ralph is the murderer he should have satisfied his curiosity. That is not always correct. That is because when Holmes comes to know that Ralph is the murderer, it does not immediately follow that he knows who the murderer is. Suppose that Holmes receives an anonymous phone call from a man who claims to be the murderer. Let us assume that caller is in fact the murderer and he manages to convince Holmes that this is the case by telling Holmes very specific detailed facts about the murder. Let us further suppose that Holmes now has come to know that the caller is in fact the murderer. Even so Holmes still knows very little about this guy, in fact even if the caller tells him that his name is "Ralph" it might make no difference. After all the name "Ralph" may be a made up name, and Holmes may still wonder who this person is. Under this scenario it would not be wrong for Holmes to assert that he does not know who the murderer is.¹¹ There is at least a strict use of the notion of *knowing who* under which this is the case. He might come

¹¹ It is commonplace in philosophy to hold that *knowing who* is an interest relative term. I have argued in my (2012) that the reason for this is because in many contexts the notion of *knowing who* is used elliptically for a longer notion, though there is also what I called a "strict use" of this notion that is non-elliptical and therefore not interest relative. Braun (2006) is perhaps the only one in the literature who also argues against the interest relativity of knowing who. However the epistemic standards on Braun's view of knowing who someone is, is so low that all it takes for one to know who someone is to know a property of that person which need not even be a uniquely identifying one. Obviously I disagree with Braun, for it appears that on his view we would not be able to express genuine curiosity by asking a who-question. See my (2012, pp. 60–61) for a discussion of Braun's position.

to know that Ralph is the murderer, and if he was asked who the murderer is he could say "It is Ralph", but that does not change the fact that he does not know who Ralph is; his degree of acquaintance with Ralph is not sufficient. There have been actual cases like this. One was the famous Unabomber case. Before the suspect was caught, the police and the media had given the name "Unabomber" to the person who was responsible for a number of mail bomb incidents. Even the name all by itself aroused curiosity. People were curious about the Unabomber, given that they did not know who he was. Now go back to early 1990s when the Unabomber sent one such mail to a university office. Initially the police may have been curious as to whether the Unabomber struck again, and whether he or someone else was responsible. After investigating the evidence let us assume that they found out that it was the Unabomber again who was responsible for this latest incident. That may have satisfied their curiosity whether the Unabomber was responsible for the latest incident, but they still did not know who he was. They were still curious about this. The satisfaction of objectual curiosity requires more than learning that a certain proposition is true. It requires raising the degree of your acquaintance with the object of your curiosity to a certain level. What that level should be depends on one's interests and many other contextual factors. Reaching a certain degree of acquaintance of the object of curiosity may satisfy one but not satisfy another, and even the same person may change his standards from one context to another.¹² What is important to note here is that the police and the media and the interested public were curious about who the Unabomber was given that their degree of acquaintance with this person was too low. All that they knew of him was what they were able to gather from the evidence of the bombs he had sent. And given that there was a lot of interest in the case, there was a lot of curiosity.¹³

So we may then wish to conclude that there are two main parameters that determine the degree of one's (objectual) curiosity, namely the degree of interest and the degree of acquaintance. That would not be fully accurate. If you are curious about the colors of the Jamaican flag, that does not imply that there are certain colors in this flag of which you have a low degree of acquaintance. It is not that you wish to know more about a certain color and raise your degree of acquaintance with it. Rather given that you are already acquainted with the basic colors, you wish to know which ones appear in the Jamaican flag. In fact you may truthfully say "I am acquainted with the colors of the Jamaican flag", and then you may add "but I do not know which colors those are". If you have a particular interest in flags, then you may be

¹² For a more detailed discussion of this see *Chapter 10 Relativity of Curiosity and Its Satisfaction* in Inan (2012).

¹³ I am in full agreement here with Kvanvig (2003) in his emphasis on the need to appeal to an objectual epistemic notion to explain our epistemic virtues. Kvanvig makes a further distinction between *understanding* and *knowledge*, and places *objectual understanding* at the top of the epistemic values. For the present purposes all that I am committing myself is the view that in order to account for the satisfaction of curiosity we need to appeal to some epistemic notion that forms a relation between an agent and an object. It seems to me that our common use of the verb *to know* in the objectual sense captures exactly this, though following Kvanvig we might prefer to replace it with the notion of *understanding*.

curious about this even if you know that you are acquainted with the object of your curiosity (which is a set of colors in this case). Curiosity does not always imply lack of acquaintance. As in this case, a curious subject may have a relatively high degree of interest, but also a relatively high degree of acquaintance with the object of his curiosity. If the degree of acquaintance is high, why should our subject be curious? The short answer to this question is that curiosity has conceptual content. What you lack in this case is not acquaintance with certain colors, but rather you wish to know which of those colors (that you are already acquainted with) fall under the concept *the colors of the Jamaican flag*. You are curious given that you do not know which colors this term refers to. Acquaintance is an extensional notion, whereas what we need is an intensional one, that is, we need a notion that is sensitive not only to the degree of acquaintance of the object of curiosity, but also to what concept you represent that object in your mind. I will call this parameter “the degree of ostensibility”. Roughly this notion applies to how the curious subject is epistemically related to an object *under a concept*. To be curious about an object we need to be able to conceptualize it; the basic tool by which we achieve that is by constructing a definite description whose referent is unknown to us, what I have called an “inostensible term”¹⁴ relative to a subject, that is a term whose referent is unknown for that subject. The referent may be unknown because the subject may simply not have come across it before. Holmes may be curious about the murderer even when he has no suspects, and when he has no epistemic connection to the murderer except for whatever evidence there is at the murder scene. But we may also be curious about the referent even when we do have some close epistemic connection to it, when the referent is in fact an object we are partially acquainted with, and even when we know that this is the case. If Holmes has sufficient evidence to come to know that the murderer is one of the two suspects both of whom he knows to a certain degree, he may still be curious as to which of them is in fact the murderer. Satisfaction of curiosity takes place only when we come to know that a certain object is the referent of our inostensible term. For Holmes to satisfy his curiosity, he must be able to connect his inostensible term “the murderer” with one of the two suspects and come to know this. If Ralph is the murderer, Holmes must come to know Ralph as being the murderer, where “Ralph” is an ostensible term for Holmes in that he knows that this name refers to a person with whom he has some high degree of acquaintance. We may now say that the degree of ostensibility of a term d for a subject S reaches its maximum level if there is an object o such that S is completely acquainted with o and S knows that o is the referent of d . The degree of ostensibility will be very low if there is no object that S is acquainted with which S knows to be the referent of d . And then there will be intermediate cases in which there is an object o with which S has a certain intermediate degree of acquaintance.

The degree of curiosity then is a function of two factors: degree of interest and degree of ostensibility. It is directly proportional to the former and inversely proportional to the latter. Acquaintance is by itself not one of the direct parameters that

¹⁴See Inan (2010, 2012) for a detailed discussion of the distinction between ostensible versus inostensible terms.

determines curiosity and its degree. Note that acquaintance is an epistemic relation between an object and a subject; it is a purely extensional relation – rather than an intensional one. That is because the *acquaintance* relation says nothing about how the subject conceptualizes the object in question. Presumably this is not true for propositional knowledge or belief. When you say Sue knows that the world is round, you do say something about how she conceptualizes a certain fact. But when you say that Sue is acquainted with Ben, you say nothing about how Sue conceptualizes Ben. Now it might be the case that *acquaintance* always requires a form of conceptualization, i.e. in order for Sue to be acquainted with Ben she must have some kind of mental representation of Ben which has conceptual content. Or one might follow Russell here and hold that there is direct acquaintance with some kinds of entities that is pre-linguistic having no conceptual content. Either way it is a fact that an acquaintance attribution in the form [S is acquainted with o] says nothing about how the subject conceptualizes the object. This is exactly why *acquaintance* together with *interest* are not sufficient to explain curiosity. I claim that curiosity always requires the representation of an unknown object. That kind of representation for us has conceptual content. If there are other forms of representation that we, or some animals, or some extra-terrestrial beings employ, then there are other forms of curiosity that do not have conceptual content. Still the curious being must be able to represent something unknown; without it there is no curiosity. That is why some animals or infants who exhibit novelty seeking behavior, and try to explore their environment are not necessarily curious beings on my account. Wandering is not wondering. To wonder, in the sense of being curious, one must have the ability to attempt to single out something unknown and seek it. This requires a higher order mental capability than simply having the instinct or drive to be attracted to novel things in the environment. So even if one may make a case that there can be curiosity with no conceptual content, there cannot be curiosity without the ability to represent the unknown. This kind of representation is what I take to be a form of purported reference, (which I call “inostensible reference”.) Every curious being attempts to refer to an unknown; if there in fact is such a thing, then reference may succeed, if there is no such thing then it fails. Either way there is an attempt to refer to the object of curiosity. It is in this sense that curiosity is an intentional as well as intensional mental state. It is intentional in the sense that it is directed towards an object (though it may turn out that there is no such object), and it is intensional in the sense that it has representational content. That representational content when expressed in language is captured by an interrogative sentence. Given that sentences have conceptual content, it follows that human curiosity expressible in language has conceptual content. This is exactly why we cannot account for objectual curiosity by appealing to the notion of acquaintance alone. Acquaintance is an extensional notion, but what is needed is an intensional notion such as ostensibility. Objectual curiosity requires one to grasp a concept which determines the object of one’s curiosity. The degree of curiosity is then a function of the degree of ostensibility of that concept. The notion of acquaintance is still relevant, but in an indirect way. We may define the ostensibility of a concept for a subject in terms of the degree of acquaintance of the object (determined by that concept) *under that concept*.

This account takes acquaintance as admitting of degrees. That was not the case for Russell who took “acquaintance” to be an absolute notion, an all or nothing affair. Russell did however distinguish between different stages of “removal from acquaintance”:

It will be seen that there are various stages in the removal from acquaintance with particulars: there is Bismarck to people who knew him, Bismarck to those who only know of him through history, the man with the iron mask, the longest-lived of men. These are progressively further removed from acquaintance with particulars...¹⁵

Once we lower Russell’s standards of acquaintance, then it should follow that what he calls “the stages of removal from acquaintance” can simply be captured by the notion of “the degrees of acquaintance”. Note that on Russell’s account all these examples in the quote above are cases of what Russell called “knowledge of things”. There were two forms of it; knowledge by acquaintance and knowledge by description: Bismarck knows himself by acquaintance, and we know Bismarck by description. In the terminology adopted here this would imply that Bismarck’s degree of acquaintance was maximum (say 1), but since our knowledge of him is indirect and mostly based on testimony of others our degree of acquaintance whatever it is, is less than 1. For a good historian who specializes in that period that degree may be quite high, for others it may be lower. The lower it gets the more room there will be for curiosity. If all I know about Bismarck is that he was a famous historical figure, I might then be curious about him. I could express this in a question form: Who is Bismarck? Now the problem with this classical piece by Russell is that it says a lot about knowledge but nothing about ignorance and obviously nothing about curiosity. There is, I believe, an intuitive cut off point between the four stages of removal from acquaintance that Russell talks about. Bismarck had knowledge of himself by acquaintance and we know him through history, but what about the man with the iron mask, and especially the longest-lived of men? These are supposed to be two cases of knowledge by description on Russell’s account. It seems clear to me that they aren’t. I do not know the longest lived of men. It is simply wrong to attribute to me knowledge of him. The degree of ostensibility reaches a very low level in such cases. That is why we easily become curious. That is I do not know of any individual as being the longest lived of men, which is exactly what makes the definite description “the longest lived of men” inostensible. If I have an interest in the topic, I could become curious about who in fact was the man with the iron mask or the longest lived of men. It will be more difficult to bring yourself to be curious about who Bismarck is, if you know a lot about him. The more you know the more difficult it will become. Just like a degree of belief that is short of complete certainty will allow for curiosity, a degree of ostensibility that is short of full acquaintance under a concept will leave some room for curiosity.¹⁶

¹⁵Russell (1910), p. 116.

¹⁶For a more detailed discussion of this see *Chapter 3, Knowledge by Acquaintance and Knowledge by Description*, in Inan (2012).

Finally let me note that in dealing with propositional curiosity the central notion that I have appealed to, namely, *degree of belief* can perhaps be cashed out in terms of the notion of *degree of ostensibility*. If one takes the object of propositional curiosity to be an unknown truth value, then we may translate every such case into an inostensible definite description that refers to one of the two truth values (or to some other value if one subscribes to many-valued system of logic.) If you are curious about whether there is life on other planets, then, under this account, what you wish to know is the referent of the definite description “the truth value of the proposition that there is life on other planets”. This is the inostensible term that gives rise to your curiosity. If your degree of belief regarding this proposition is 0.5, then the degree of ostensibility of the definite description will be at its minimum, namely 0. And if you have a degree of belief that is higher, then the degree of ostensibility of the definite description “the truth value of the proposition that ...” will also be higher. If so, then degree of belief will simply be a special case of degree of ostensibility. The degree of ostensibility of a whole declarative sentence is also a function of the degree of ostensibility of its constituent terms. Consider a simple sentence in the subject/predicate form, and suppose S knows with complete certainty the proposition expressed by it. In this case the degree of belief for S is 1. Now normally that would imply that the degree of ostensibility is also 1 for S. That however is not always the case. The degree of ostensibility of a sentence is a function of not only the degree of belief, but also the degrees of ostensibility of the constituent parts of the sentence. I know with complete certainty that the 12th perfect number is not a prime. That is because I know that no perfect number is a prime, not because I have calculated the 12th perfect number and discovered that it was not a prime. Though my degree of belief is 1, my degree of ostensibility is significantly lower. It cannot be higher than the degree of ostensibility of the subject term “the 12th perfect number”, which is quite low because I do not know what number it refers to. All I can claim to know about this number is what I can immediately deduce from the description together with my background knowledge of perfect numbers. The degree of ostensibility also applies to the predicate term within that sentence. Now given that I know what a perfect number is, and that I know a few examples, my degree of ostensibility is quite high. That might not always be the case. There can be a predicate term that one grasps without knowing what property is denoted by it. If I ask you what color your lover’s eyes are, and you answer by saying that they are your favorite color, I will have learnt something new, but I still may not know what color your lover’s eyes are if I don’t know your favorite color. So if you utter the sentence “my lover’s eyes are my favorite color”, the degree of ostensibility of the subject term would be reasonably high for me assuming that I know your lover to some extent, but the degree of ostensibility of the predicate term would be quite low for me given that I do not know your favorite color. We may also imagine that I have no clue as to who your lover is, and know nothing about her except that she is your lover and whatever else I can deduce from that. In such a case my degree of ostensibility of the subject term will also be very low. So it is possible to know that a proposition about a person is true even when you do not know who is being talked about and what is being said about her. Of course

I know that the proposition is about your lover, and if some third party were to ask me who you are talking about I could truthfully say “he is talking about his lover”, but that does not change the fact that I do not know who your lover is, if we give the term “knowing who” what I have called its strict use.¹⁷ The degrees of ostensibility for both the subject as well as the predicate term may be close to 0, and yet I may still know that the proposition is true. If I take your word for it, then I may come to know that your lover’s eyes are your favorite color. My degree of belief might be very high, close to 1, but my degree of ostensibility is nonetheless very low. That is why I hold that there are two ways to satisfy propositional curiosity, *de re* and *de dicto*.¹⁸ Merely coming to know that the proposition is true will give you *de dicto* satisfaction. You will come to know that there is a fact that makes the proposition true, but you are still in the dark as to what constituents that fact has. You know that a certain person has a certain property, but you neither know who that person is, nor what property is being predicated of her. That is why the degree of ostensibility of the whole sentence is very low. In order to satisfy your curiosity *de re* you need to raise it, and to do that you have to come to know that person and the property attributed to her. This will put you in touch with that fact. Merely *de dicto* satisfaction gives you what I have called inostensible knowledge, whereas *de re* satisfaction gives you ostensible knowledge. Propositional knowledge and belief attributions are not fine grained enough to distinguish between these two cases.

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¹⁷ See Chapter 2, *Asking and Answering*, in Inan (2012).

¹⁸ For a more detailed discussion of the distinction between *de re* and *de dicto* satisfaction of propositional curiosity see Chapter 9, *Conditions for the Satisfaction of Curiosity*, in Inan (2012).

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