sciendo

studia humana
QUARTERLY JOURNAL

Studia Humana
Volume 8:1 (2019), pp. 93—98
DOI: 10.2478/sh-2019-0007

Biology and Gettier's Paradox

Gonzalo Munévar

Professor Emeritus, Lawrence
Technological University, Michigan, USA

e-mail: gmunevar@ltu.edu

Abstract:
Gettier's Paradox is considered a most critical problem for the presumably obvious philosophical view that knowledge is justified true belief. Such a view of knowledge, however, exposes the poverty of analytic philosophy. It wrongly assumes, for example, that knowledge must be conscious and explicit, and, to make matters worse, linguistic, as illustrated in Donald Davidson's writings. To show why this philosophical view is wrong I will point to arguments by Ruth Barcan Marcus and, principally, Paul Churchland, as well as to work by the neuroscientist Paul Reber on intuitive knowledge. We will see, then, that much of our knowledge is neither explicit nor conscious, let alone linguistic.
I will suggest that an approach that pays attention to biology is more likely to succeed in developing a proper account of our cognitive abilities. Thus, Gettier's paradox becomes a mere curiosity.
Keywords: Gettier's paradox, justified true belief, non-linguistic knowledge, intrinsic learning, neural nets.

1. Introduction

A biological approach to knowledge provides philosophers with a promising alternative to analytic epistemology. For example, philosophical analysis recognizes as intuitive the notion that knowledge is justified true belief. That intuition, unfortunately, runs into trouble because of Gettier's paradox, but analytic philosophers, far from being professionally embarrassed, revel in the opportunity to either solve the paradox or make it even more perplexing. But to me, the main problem with the apparently intuitive notion that knowledge is justified true belief is that it assumes that knowledge is propositional and thus linguistic. This assumption is much at odds with evolutionary biology and recent advances in neuroscience. Many philosophers defend the autonomy of philosophy against such scientific interlopers, but it seems to me that the case for philosophical autonomy, at least where it concerns the issue of knowledge, is weak and implausible. If my arguments are accepted, the most important paradox of contemporary analytic philosophy should become little more than a scholastic curiosity. Indeed, philosophical analysis, at least in its linguistic mode, will become little more than an occasionally useful tool in an epistemology more in consonance with our scientific times.

2. The "Most Significant Problem in Epistemology"

The great majority of analytic philosophers consider Gettier's paradox to be the most significant problem in epistemology. The paradox goes as follows. Let us say that Mary knows that Paul is in the study. According to philosophical analysis, this claim presumably means that
(1) Mary believes that Paul is in the study.
(2) Mary's belief is true.
(3) Mary is justified in holding her belief.

What counts as justification may be a matter of debate – perhaps all it takes is for Mary to see Paul in the study – but as long as we agree that she is indeed justified in her belief, and that her belief is true, we should conclude that Mary knows that Paul is in the study.

Imagine the following situation, however. There is a perfect replica of Paul "sitting" at the desk in the study. Looking through the window, Mary sees the replica and forms the belief that Paul is in the study. Presumably this is a justified belief. But, and this is Gettier's trick, imagine also that Paul is in the study. Not at the desk, but hiding behind the couch. Still, the sentence "Paul is in the study" is true. Thus, Mary believes that Paul is in the study, her belief is justified, and her belief is true. But surely, we want to resist concluding that she *knows* that Paul is in the study.

Analytic philosophers have proposed a variety of ways to solve this paradox, most of which have caused much debate. A popular move, for example, is to demand that in addition to justified true belief certain other conditions be met before we consider that a particular claim constitutes knowledge ("JTB Plus"). But discussing such moves is not my concern in this paper.

My suggestion is that analysis does not settle the matter. Indeed, I will go further than that: Analysis is the wrong approach to determine the nature of knowledge.

Philosophers from A-Z have occasionally found the JTB account unintuitive. Just to mention the P's, remember that Plato in his *Republic* thought that knowledge and belief (opinion) were so different in kind that no qualification could possibly make a belief count as knowledge. Thus, for him, having a belief could not be a requirement for knowledge. And Popper argued that scientific knowledge could not involve justification (in the way philosophers think of justification). Science works by trial and error: Scientists propose hypotheses and try to falsify them. Persistent failure to falsify a hypothesis does not justify it; at best, it inclines scientists to accept it tentatively (the next test may finally refute it). Important philosophers have thus thought of knowledge without belief or justification.

Of course, they could be wrong while analytic philosophers are right in wringing their hands about Gettier's apparently unsolvable paradox.

Plato, Popper, and the analytic philosophers nonetheless seem to agree on a crucial connection between knowledge and rationality. For analytic philosophers, rationality tends to be defined in terms of consistency, implication, logical truth, etc., of sentences or propositions. A rational agent approves of consistent sentences, for example, and strongly disapproves of contradictions. Knowledge is linguistic, and so is belief. Creatures without language, Donald Davidson argues, cannot have beliefs (and thus cannot have knowledge). Moreover, he asks, "Can a creature have a belief if it does not have the concept of a belief?" The answer is no, apparently because creatures without language can have no concepts. As Davidson explains further, "Someone cannot have a belief unless he understands the possibility of being mistaken and this requires grasping the contrast between truth and error – true belief and false belief. But this contrast… can emerge only in the context of interpretation [of a language]" [5, pp. 22-23]. This is not surprising, since truth and falsity are properties of sentences (or propositions).

This implies that dogs, chimps and young children have no beliefs, and thus no knowledge, since they are not language users. But denying them beliefs seems absurd, as Ruth Barcan Marcus argues [10, pp. 233-256]. Consider a case, she suggests, in which Jean and his dog Fido are lost in the desert. At one point they see a mirage of an oasis and they crawl eagerly towards it. Their behavior makes it reasonable to say that they both have the (mistaken) belief that there is water a few meters in front of them. But according to the likes of Davidson, Jean believes mistakenly that there is an oasis a few meters in front of him. Fido has no beliefs at all [10, p. 234]. To make matters worse, for Davidson and others, belief is a conscious relation between a subject and a sentence. This would rule out all unconscious, or subconscious, beliefs. This is, again, unreasonable. As Barcan Marcus points out, being asked why we act as we do may make us realize, for the first time that we have certain beliefs, indeed we might have had them for a while even though we were not aware of them. We do not always "entertain propositions or sentences we hold true while acting." For example, "I often walk a route to my office that is not the shortest and am asked why. It requires some thought. It isn't out of habit, I decide. I finally realize that I believe it to be the most scenic route" [10, p. 239].

Split-brain experiments, and a great number of other experiments in neuroscience clearly indicate that we have unconscious beliefs. Moreover, the brain mechanisms involved are not found only in humans. In actuality, several animals also have the brain structures apparently involved in some of our conscious experiences.

The linguistic "imperative" when it comes to belief seems quite feeble now. But if belief can be non-linguistic, so can knowledge. If knowledge is made of the "right kind" of beliefs (i.e. justified), but those beliefs turn out not to be linguistic, knowledge will also not be linguistic.

Perhaps we could insist that only linguistic beliefs can count as knowledge. But consider that without a decent grasp of their environment, including their social environment, many animals would be unable to function and survive. Why should we say that such a grasp does not amount to knowledge? Indeed, knowledge can clearly be adaptive for many creatures. A chimp, for example, will track down ants to their colony. He will then break a branch off a bush, clear it of leaves, smear it with saliva, and poke it into the entrance to the anthill. From time to time he will take this convenient tool out and eat the ants that have got stuck to it.

But if animal knowledge is not linguistic, so is much of human knowledge. A gifted football (soccer) player (in Spanish: "de los que saben" – one of those who know) will instantly grasp the lay of the field and will give the ball the right touch so it will curve over and around opponents and land at the feet of a sprinting teammate with a chance to score. If the gifted player stopped to think consciously about he was to do, his play would fall apart. Conscious verbalization, since it takes even longer, would likely interfere with his knowledgeable behavior even more.

For some this is a case of "knowing how," not of the relevant "knowing that." But let us say that I am very good at reading people, at least certain people, and tell whether they are lying or not. Liz sits in front of me and gives me an excuse. Just from my unconscious (or subconscious) reading of her I can tell whether she is lying or not. But if I try to consciously verbalize the workings of my brain in picking up her clues, I lose my chance of being able to tell *that* she is lying (or *that* she is not).

The neuroscientist Paul Reber offers a very telling example:

> A fireman in Cleveland cleared his team from a fire scene because he "sensed" that something was odd about the situation. Indeed, the floor was about to collapse because of a raging fire below. The lieutenant fireman who saved his men was not aware of the danger in the usual sense, but rather he was observant enough and skilled enough to know that something was not right. He acted on that indication before consciously realizing what wasn't right or what danger was present. At first he thought it was ESP. Only much later did he begin to understand the clues he had sensed.

This example of successful intuitive knowledge, Reber tells us, "can be credited to implicit processing of the environmental cues, leading to escape from an imminent catastrophe… our brains possess an array of mechanisms for automatically extracting information from the environment without our awareness." It is his conjecture, thus, that "implicit memory is critical in producing trustworthy intuition" [12, pp. 474-475]. Reber tells us that deliberate processing can actively block the use of intuitive knowledge, as we can see in the football player example given above. The mechanisms of implicit learning may also interfere with conscious reasoning, and "the systems often appear to compete such that only one system can influence behavior." Nevertheless, sometimes they do cooperate, e.g. in as fundamental a cognitive activity as categorization. Indeed, as Reber informs us, extensive neuroscientific investigations have even revealed the key brain regions involved: medial temporal lobe activity is associated with explicit memory for prior examples; posterior caudate activity correlates key brain systems associated with implicit learning; and dorsolateral prefrontal cortex activity is associated with resolving competition between implicit and explicit processing [12, p. 479].

The notions of knowledge entertained by analytic philosophers do not seem to do justice to our cognitive abilities, let alone those of animals. Now, if I may be allowed a personal anecdote, after years of doing research and teaching cognitive neuroscience and cognitive psychology, as well as other related courses, I decided to look at the many textbooks I had used, or considered using, or had reviewed for publishers, just to see how important the notion of "belief" was to the science of human cognition. The first step in such a search is to look for "belief" in the subject index. I was not able to find any appearances of that word in any of those books. Perhaps I missed one or two, but I doubt it. In science, the notion of belief, let alone justified true belief, is hardly ever used to investigate the nature of knowledge.

In the *Theaetetus*, Plato tells us that to make a true judgment about something we must already be able to distinguish it from other things (209a-b). If someone can always, or nearly always make the right distinctions, why should that ability not suffice for knowledge? (Why must we also have an "account," as Plato put it, or a "justification," as analytic philosophers put it?)

Knowledge can be demonstrated – and I think we can agree with the analytic philosophers on this – when the agent almost unerringly makes the appropriate conceptual distinctions. It is a fiction, however, to hold that language is necessary for having concepts. Vectorial transformation of information in the brain, for example, explains how concepts are located in non-linguistic vectorial spaces. What is not located in a vectorial space is taken to be different from the concept in question. Paul Churchland points out that our ability to discriminate sensory qualities "usually outstrips one's ability to articulate… the basis of such discriminations in words." Indeed, we can have the concept of "catness" even though we cannot put into words what counts as a cat. We could define "cat" as "a smallish, furry, four-legged predatory mammal with small, sharp teeth, a serpentine tail, a fondness for chasing mice, and a 'meaow'-like cry" [4, pp. 144-145]. Biologists of course would give a more rigorous definition. But we do not need either definition in order to identify a cat as such. "A mute, three-legged feline amputee with a bobbed tail, dull teeth, and all the predatory instincts of a couch pillow will still be reliably identified as a cat by any normal person, even by a child." And by a dog also, we might add.

The brain structures of language grow out of other brain structures. But those underlying structures are already sufficient to account for knowledge (although not for that subset of knowledge which is strictly linguistic, such as knowledge of language).

These considerations extend to scientific and social knowledge, as we will see in the next section.

3. Western Elitism

A very important moment in the development of Western elitism, according to Feyerabend, was the rejection by Socrates of the Homeric worldview. In particular, Socrates would ask his fellow citizens to tell him what virtue, justice, and knowledge were. When they gave him a list of examples in which the word was appropriately used (e.g., the virtue of a man, the virtue of a woman, of a child, etc.), Socrates sarcastically replied that he had asked for one thing and his interlocutor had given him many. Socrates wanted a definition, a universal; they gave him particulars. Greeks, Feyerabend thinks, thought in terms of examples. Indeed, "the view that giving an account means enumerating instances, not subsuming them under a single term, retained its popularity right into the classical age of Greece" [8, p. 38]. Thus, we have two competing models of knowledge: the examples model and the abstraction model. Or, perhaps I should say, we *had* two models, since apparently the examples model was pretty much run over by Western elitism.

I do not believe that it has died, though. In fact, I would wager that it is the way most human beings still think. And there is a good reason for it: That is how the human brain works. Feyerabend's comrade-in-arms, Kuhn, was the first philosopher of science to call our attention to this matter. He argued that, when scientists practice their trade, they do not apply rules but instead learn to see problems as being like other problems they encountered before, where "being like" is best explained by Wittgenstein's notion of "family resemblance" [9]. Scientists are thus trained on a collection of particularly instructive examples ("exemplars") that will enable them to develop a grasp of the way their discipline approaches its investigation of the world. The rules Kuhn would have us do without are the analogs of Socrates' abstract definitions, and thus it was not surprising that his proposal, which expelled from science the sort of decision procedures dear to the hearts of philosophers of science, met with mumblings against Wittgenstenian obscurantism [cf., also 7]. But science has come to Kuhn's rescue.

In the last three decades, scientists and philosophers have collaborated in a program to explain the workings of the human brain (in part) as a complex of neural nets. As Paul Churchland explains, a neural net is designed to compute a large number of functions, even functions that we are *unable to specify*, "so long as we can supply a modestly large set of *examples* of the desired input/output pairs" [3, p. 6]. This process, by the way, is called "training up the network." In artificial networks, the error in the output in the first run is calculated and fed back to the units in the network. This procedure will lead to a readjustment in synaptic weights in the network (this is the "back-propagation" algorithm). After repeating the procedure many times over, the network will finally assume "a configuration of weights that does yield the appropriate outputs for all of the inputs in the training set" [3, p. 7]. We can, for instance, train a network to discriminate sonar echoes of explosive mines from those of submarine rocks, explains Churchland. After it has been trained, the network will be able to identify reliably echoes it has never heard before. It is important to realize that "neural nets typically have no representation of any rules, and they do not achieve their function-computing abilities by following any rules. They simply 'embody' the desired function, as opposed to calculating it" [3, p. 12].

This account sounds very much like Kuhn's explanation of how scientists typically operate. It certainly seems reasonable to consider it a serious model of the typical workings of human neural nets. Contrast it now with the failure of classical artificial intelligence (AI) to explain human thinking in terms of abstract rules.

This elitist philosophical approach extends to morality as well. "Greek morality at the time of Plato," Feyerabend says, "was a morality of instances and examples, not a morality ruled by abstract properties" [8, p. 259]. I would bet that the same could still be said of most fruitful human moralities (as opposed to ethical models invented by philosophers). Churchland has developed this very point in a very provocative way [4, pp. 143-150], [11, pp. 130-147]. For some of the many ways biology may

also influence the evolution and nature of morality (human and animal), the reader may wish to consult [1], [2], [6] and [13].

4. Conclusion

Knowledge need not be linguistic. Moreover, knowledge is the result of adaptive brain structures at work. We can say that an intelligent creature knows because its relevant behavior succeeds. The justified true belief model, therefore, fails to capture characteristic, let alone obligatory, features of knowledge. Since we can dispense with justified true belief as an account of knowledge, we need not concern ourselves unduly with philosophical tricks that seem to confront that account with paradox. Gettier's clever objection becomes a mere curiosity.

References

1. Bernal, J. S. The Role of Sex and Reproduction in the Evolution of Morality and Law, In F. de Sousa and G. Munévar (eds.), *Sex, Reproduction and Darwinism*, London: Pickering & Chatto, 2012, pp. 141-152.
2. Churchland, P. S. *Braintrust: What Neuroscience Tell Us about Morality*, Princeton University Press, 2011.
3. Churchland, P. M. A Deeper Unity: Some Feyerabendian Themes in Neurocomputational Form, In G. Munévar (ed.), *Beyond Reason: Essays on the Philosophy of Paul Feyerabend* (*Boston Studies in the Philosophy of Science, Vol 132*), Boston: Kluwer Academic Press, 1991.
4. _____. *The Engine of Reason, the Seat of the Soul*, Cambridge: Massachusetts Institute of Technology, 1996.
5. Davidson, D. Thought and Talk, In S. Guttenplan (ed)., *Mind and Language*, Oxford: Oxford University Press, 1975, pp. 7-23.
6. De Waal, F. *Primates and Philosophers: How Morality Evolved*, Princeton University Press, 2006.
7. Dreyfus, H. L. *What Computers Can't Do: A Critique of Artificial Reason*, New York: Harper & Row Publishers, 1972.
8. Feyerabend, P. *The Conquest of Abundance: A Tale of Abstraction vs. the Richness of Being*, Chicago: University of Chicago Press, 2000.
9. Kuhn, T. S. *The Structure of Scientific Revolution*, Chicago: University of Chicago Press, 1970.
10. Marcus, R. B. *Modalities: Philosophical Essays*, New York, Oxford: Oxford University Press, 1993.
11. Munévar, G. *Evolution and the Naked Truth: A Darwinian Approach to Philosophy*, Aldershot: Ashgate Publishing Company, 1998.
12. Reber, P. J., M. Beeman, and K. A. Paller. *Human Memory Systems: A Framework for Understanding the Neurocognitive Foundations of Intuition*, International Conference on Augmented Cognition, AC 2013: Foundations of Augmented Cognition, 2013, pp. 474-483.
13. Peterson, D. *The Moral Lives of Animals*, London: Bloomsbury Press, 2011.