

On Human and Non-Human Animal Knowledge: From a Difference of Kind to a Difference of Degree

by Cameron Brown

Abstract:

This paper unpacks implications of the too-often unmentioned fact that the project of naturalizing epistemology (*a la* Quine, Kornblith, and others) has not only given epistemologists a new method of inquiry, but has created an entirely new subject matter. I trace the origins in the history of philosophy of the view that human knowledge is different in *kind* from non-human knowledge, and expose how this unwarranted assumption has buttressed traditional analytic (read: armchair) philosophy. I show how in response to traditional analytic philosophy naturalized epistemologists have given an account of knowledge as a natural kind by drawing on the literature of cognitive ethology, and in turn how this account rebuts the analytic assumption of a fundamental divide between human and non-human animal knowledge. Finally, I consider whether or not such alternative accounts offered by naturalized epistemologists carry ontological consequences; that is, whether our knowledge is structured the way it is because The World is just so structured. I warn against drawing ontological conclusions from our epistemology, but I affirm the possibility of learning more about The World by observing how its non-human inhabitants interact with it.

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The project of naturalizing epistemology has required more than mere methodological revision; it has required naturalized epistemologists to rediscover an entirely new subject-matter. Though the phenomenon of knowledge is quite old, the study of knowledge *qua* natural phenomenon is highly novel. Traditional epistemologists take knowledge to be a *conceptual* phenomenon intelligible solely by a priori analysis. This approach has been pursued under the Kantian delusion that epistemology is the most important branch of metaphysics – a “transcendental philosophy of pure reason” – and

hence has no need for any particular empirical theory of knowledge. An immediate consequence of rejecting the traditional approach then, is the need to provide an empirical account of knowledge *qua* natural phenomenon. One such promising effort is the view that knowledge is a natural kind(s). After briefly introducing the notion of natural kinds I will highlight two important argumentative strains that inform the knowledge as conceptual kind account. I situate these arguments historically in order to draw out the significance of the shift to a naturalized epistemology. I then focus on the more empirical part of Hilary Kornblith's argument that knowledge is a natural kind, emphasizing his normative account of truth. My aim is neither to attack nor defend this argument, but to consider whether or not knowledge as a natural kind has any ontological consequences; it seems *prima facie* that the account of truth Kornblith (and similarly Clarke) works into his naturalized epistemology commits him to some form of direct or convergent realism. I then argue that, even granting that knowledge is indeed a natural kind, this fact does not sway us toward one or the other metaphysical position.

First let me clarify what it means for something to be a natural kind. Roughly, a natural kind is a non-artificial grouping of things, or set of things with commonly occurring properties. The presence of these properties is a reliable indicator of the presence of some other properties.<sup>1</sup> A natural kind is therefore any naturally occurring homeostatic cluster of properties that supports inductive inference for the purposes of

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<sup>1</sup> Kornblith 1993, p. 7.

scientific investigation.<sup>2</sup> Combined with a causal theory of reference, the notion of natural kinds has enabled sophisticated scientific realist explanations of scientific progress.<sup>3</sup> On the realist view of the empirical sciences, a successful taxonomy is one that corresponds to real kinds in nature, whose classifications “carve nature at its joints”; such classifications may persist through theory change even if our descriptions of the taxa change.

A common example of a natural kind is gold: it is a natural chemical kind that can be individuated from all other elements solely in virtue of its microstructural properties. Likewise, water (H<sub>2</sub>O) is a natural compound kind since its constituent elements maintain a homeostatic molar proportion of 2:1. **In biology things are less clear, namely in respect of the species problem.** Here one finds a variety of species concepts – typological, biological, ecological, et cetera – each proposing to ‘carve’ nature in a different way.<sup>4</sup> Yet, whichever species concept biologists eventually do settle on, if species is to be a natural kind, it will have to satisfy the following three individually necessary and jointly sufficient conditions:

- (1) The properties are mutually supporting and reinforcing in the face of external change (homeostatic properties).
- (2) These microproperties give rise to the kind’s characteristic observable properties by virtue of the causal powers of the micro properties (standard observable effects).

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<sup>2</sup> Ibid.

<sup>3</sup> Kornblith 1993, p. 6; see Chakravarty 2007 for problems with entity realism.

<sup>4</sup> Mayr 2004, ch. 10.

- (3) Causal laws obtain because the microproperties cause and explain the observable properties of such well-behaved, natural kinds (supports causal laws).<sup>5</sup>

Given that my interests in this paper are with the historical motivations behind and ontological consequences of the arguments purporting that knowledge is a natural kind, I will forego giving a detailed account of how knowledge satisfies these three conditions (see especially Clarke 2004, p. 144-5). I turn instead to the view of knowledge as a conceptual kind.

### *1. Knowledge as conceptual kind*

In order to grasp the significance of the claim that knowledge is a natural kind, we should understand something of the motivations underlying the traditional, non-natural approach to epistemology. Although there are many arguments in favour of conceptual analysis in epistemology, here is an amalgam of arguments that naturalists face:

1. Either knowledge is rational or knowledge is non-rational. (Assumption)
2. If knowledge is rational, then it obeys the laws of logic. (Assumption)
3. If knowledge is non-rational, then it does not obey the laws of logic. (Assumption)
4. The laws of logic are beyond any empirical science. (Assertion)
5. Human knowledge is rational. (Assertion)
6. Human knowledge obeys the laws of logic. (2, 5 MP)

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<sup>5</sup> Clarke 2004, 143.

7. Human knowledge is beyond the scope of any empirical science. (4, 6 MP)
8. If knowledge does not obey the laws of logic, then knowledge can be studied empirically. (Assumption)
9. Animal knowledge is non-rational. (Assertion)
10. Animal knowledge does not obey the laws of logic. (3, 9 MP)
11. Animal knowledge can be studied within the empirical sciences. (8, 10 MP)
12. Knowledge that can be studied empirically is different in kind from knowledge that is beyond the scope of empirical study. (Assumption)
13. Therefore, human knowledge is different in kind from animal knowledge. (7,13 DS or 11, 13 DS)

We can pull out two distinct arguments here. The first is the Kantian-Russellian view of epistemology (and philosophy in general) as independent of, and indeed prior to, any empirical science. The major premise of this argument is 4, while 2 and 7 are also important. A century after Russell we are in a position to reject 2 based on the work of cognitive scientists like Nisbett and Ross, Kahneman and Tversky. Moreover, the very existence of the empirical discipline of cognitive science refutes 7. Unfortunately, I cannot here comment on the truth value of 4. Nonetheless, it is this privileging of philosophy's supposed a priority that is the core of traditional analytic epistemology. The view that philosophy obeys the laws of logic and is thus essentially outside the scope of any empirical science – and can thus dictate the foundations of the sciences! - is

ultimately little more than a sanction of armchair philosophizing. Clarke nicely summarizes the underlying assumptions of this approach:

We are to believe that the results of science can have no bearing on the pristine conceptual results of analytic epistemology. We stand alone as epistemologists, providing the a priori foundations of the sciences, and remain unsullied with empirical taint. This picture of the philosopher may seem appealing to arcane ears, steeped in Platonic pedantry, but is it even vaguely defensible today? I doubt it.<sup>6</sup>

The second argument in favour of conceptual analysis claims that there is a sharp divide between human knowledge and mere animal knowledge. This gap is supposed to limit empirical investigations of knowledge to non-human animals only; we need a different means of accessing our own knowledge, for it is not only what differentiates us from non-human animals, it is what plugs us into the Divine. Since empirical investigation is ruled out, something akin to the transcendental philosophy of pure reason steps in. Our knowledge is unique and therefore our study of it must be unique. But whence this assumption of uniqueness?

The philosophical denial of reason, thought, intellect and belief to animals dates at least to Aristotle (e.g., *De Anima*, 1.2, 404b4-6; Sorabji, p. 12), who was motivated by both (psycho)-biological and moral concerns. With respect to the latter, Aristotle needed to identify a uniquely human function on which to found human morality; he chose our capacity to reason (*NE*, I). With respect to the former concern, Aristotle viewed both desire and sense perception as mental capacities separate from reason. By contrast, he included all beliefs (*doxai*) within reason, since belief is supposed to involve a rational

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<sup>6</sup> Clarke 2004, 132.

process of being persuaded, by oneself or others.<sup>7</sup> Belief is thus wedded to the uniquely human capacity for morality, while non-human animals are allowed a limited or non-rational knowledge in so far as they have sense perceptions and desires. Moreover, the conception of belief as rationally motivated lends itself to a separate Aristotelian argument in favour of a clear demarcation between human and animal knowledge: the lack of a reasoning capacity explains the inability of animals to form civic societies (*Politics* 1.2). As I show below, some philosophers are still convinced by this argument.

The modern version of the human-animal knowledge debate was largely shaped by Descartes, who proposed a much bolder separation of the two than did Aristotle. Whereas Aristotle allowed that some non-human animals have ‘likenesses’ of “the kind of understanding that has to do with thought”,<sup>8</sup> Descartes held that animals are mere material mechanisms – *automatons* - lacking not only all forms of thought but consciousness too (*Discourse*, V). On Descartes’ view, every aspect of animal being is physiologically observable and thus objectively knowable; there is nothing that it is ‘like’ to be a bat. Furthermore, Descartes offered two tests – only one of which I will mention here - by which to discover whether the operations of some entity – be it human, animal, or machine – are caused by reason, as opposed to solely mechanical processes.<sup>9</sup> The relevant test is this: discern whether the entity has the ability to “arrange words

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<sup>7</sup> Sorabji, p. 68.

<sup>8</sup> *Ibid.*, 14.

<sup>9</sup> Wilson, 497.

differently, so as to respond to the sense of whatever is said in its presence”.<sup>10</sup> In current terms, the entity has a reasoning capacity *iff* it deploys a recursive syntax.

The similarity between Descartes’ test and, say, the Turing Test aimed at the evaluation and detection of valid A.I. systems, is obvious. Such a criterion, therefore, when joined with Aristotle’s argument from *Politics* 1.2, comprises the ancestry of contemporary social metacognition accounts of knowledge, defended most vigorously by Donald Davidson and Robert Brandom.<sup>11</sup> Roughly put, these are a group of views that knowledge is a social process or phenomenon, one that consists largely in the giving and taking of reasons. Indeed, the very same problem confronts both Descartes’ criterion and the social metacognition views. As Kornblith observes:

If metacognitive processing is to be required for the possession of knowledge, whether the mandated metacognitive processes are seen as individual or social, accounts of this sort are quickly seen to have the consequence that young children...and often many adults as well, are incapable of achieving knowledge. And this is a result that most people find highly counterintuitive.<sup>12</sup>

Moreover, in so far as these views adopt the Aristotelian view of belief as an inherently rational cognitive ability - as the ability to be persuaded - they expose themselves to a further criticism: “Giving and asking for reasons is quite often epiphenomenal with respect to the fixation of belief; it is, under many conditions, counterproductive to the acquisition of knowledge”.<sup>13</sup> This criticism is but the flipside of the naturalist view that

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<sup>10</sup> Ibid.

<sup>11</sup> Kornblith 2002, p. 71-89

<sup>12</sup> Ibid., 70.

<sup>13</sup> Ibid., 74.



desires and perceptions may have a role in the fixation of belief,<sup>14</sup> thus denying Aristotle's original demarcation of rational and non-rational cognitive capacities.

We see, therefore, how epistemological naturalists can reject purely conceptual accounts of knowledge, founded largely on arbitrary Aristotelian assumptions and Cartesian biases, by proposing alternative accounts drawn from the empirical sciences. Naturalists thus have freed themselves from the Kantian or Russellian strictures that have kept philosophers bound to their armchairs. An exciting prospect, if one happens to hold the view that philosophy has more than mere antiquarian relevance.

## 2. *Knowledge as natural kind*

Against the historical background that I have set we can clearly see 1) just how entrenched conceptual accounts of knowledge and the analytic approach to epistemology are within philosophy's past, and 2) that a shift in methodology – from conceptual analysis to empirical study – entails a corresponding shift in subject matter. The next section outlines Kornblith's argument drawn from the cognitive ethology literature in favour of knowledge as a natural kind.

### 2.1 *Kornblith's argument*

Having rejected the a priori, foundational view of philosophy with respect to the empirical sciences, Kornblith focuses his attention on empirical efforts to discover what knowledge *qua* natural phenomenon really is. In particular, he proposes to learn from animal knowledge as it is understood in the science of cognitive ethology. The account of

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<sup>14</sup> Ibid., 37-42.

knowledge found here is a good starting place for a naturalized epistemology, thinks Kornblith, because it meets three interrelated conditions. The researchers in this field “typically speak of animals knowing a great many things. They see animal knowledge as a legitimate object of study”; the field “has a good deal of theoretical integrity to it”; and the unified account of knowledge that emerges here “does causal and explanatory work”.<sup>15</sup> Hence this account of knowledge will also satisfy the conditions set by Clarke on being a natural kind.

The notion that researchers “typically speak of animals knowing a great many things” is the cornerstone of the empirical account. Kornblith treats the ascriptions of intentional states to animals by cognitive ethologists as “strong *prima facie* evidence” that we cannot otherwise explain animal behaviour.<sup>16</sup> That earlier attempts to draw a thick line between human and non-human animal knowledge were merely arbitrary is underscored by the successful role played by intentional ascription in theories of animal cognition.<sup>17</sup> *Pace* Aristotle and Descartes, “the only way in which one can make sense of an animal’s ability to move around in its environment is by viewing it as engaged in certain information-processing tasks”.<sup>18</sup> Furthermore, to the extent that animals possess a proto-belief-desire psychology,<sup>19</sup> they can be seen as possessing a wealth of knowledge that we humans can and indeed have drawn upon. For example, in an article about the

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<sup>15</sup> Ibid., 28-9.

<sup>16</sup> Ibid., 32.

<sup>17</sup> Ibid.

<sup>18</sup> Ibid., 36.

<sup>19</sup> Ibid., 38.

suppression of natural healing practices (i.e., those that accompanied us on our long evolutionary march) by modern laboratory based medical practices, Marti Kheel writes:

Animals *do*, ironically, have something to teach us, but it is not a knowledge that can be wrenched from their bodies behind laboratory walls. Many nonhuman animals know instinctively what to do when ill. For example, a wild turkey during the rainy season force-feeds her young with leaves of the spice bush; a dog with a digestive problem chews upon the witch grass to produce vomiting; a bear feeds upon the fruit of rockberry with relish while fern roots become his healing agent; the wolf, bitten by a venomous snake, seeks out and chews snakeroot. Cats and dogs purge themselves with certain grasses and lie in wet mud (a source of natural 'antibiotic') in case of snake or insect bites or other irritations.<sup>20</sup>

She then suggests that much of what humans have learned about the healing power of various plants has been done by observing animals in such cases. How much of this is just so is perhaps impossible to say, but the examples cited do offer support to the ascription of a proto-belief-desire psychology to non-human animals, which then supports the naturalists' claim that there is no difference in kind between human and non-human animal knowledge.

### *2.2 Normative role for truth*

The major sticking point in the debate between natural and non-natural epistemologists is the question of normativity. Only philosophy is supposed to have the power to make normative proscriptions, say traditional epistemologists, while the empirical sciences merely describe. There are many proposals for the source of normativity within naturalized epistemology, from Quine's claim that "normative epistemology is a branch of engineering", to Goldmanian semantic analyses, to Stich's rejection of universals in favour of a grounding in local desires.<sup>21</sup> Unfortunately I cannot here consider these accounts in any detail. I want simply to state the core of Kornblith's view.

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<sup>20</sup> Kheel 1994, 656.

<sup>21</sup> Kornblith 2004, 147.

Against Stich's epistemic relativism, Kornblith develops a normative role for truth rooted in our desires, yet "universal in [its] applicability and not merely contingent upon having certain values".<sup>22</sup> That is, our cognitive systems are evolved so as to be truth-conducive, even though our preferred course of action sometimes seems not to require truth or approximate truth.<sup>23</sup> Kornblith writes:

Precisely because our cognitive systems are required to perform evaluations relative to our many concerns, and to perform these evaluations accurately, the standards by which we evaluate these cognitive systems themselves must remain insulated from most of what we intrinsically value, whatever we may value. This provides a reason to care about the truth whatever we may otherwise care about...Truth plays a pre-eminent role here.<sup>24</sup>

To deny a substantial or universal role for truth is to get hung up on the 'many concerns' that impel us through life. It is to fail to see the operative principle underlying the cognitive mechanisms that allows us to proceed through our many affairs, however idiosyncratic.

### 3. *Ontological consequences?*

Granting that knowledge is a natural kind, and given that, on Kornblith's view, "important features of our inferential tendencies may best be understood by seeing how they dovetail with the causal structure of the world",<sup>25</sup> we should ask whether the normative account of truth stated above implies that the world really *is* the way it is represented to us in cognition. That is, do we have direct access to The World? On the one hand, our ability to tap into truths is localized within our pragmatic concerns. On the

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<sup>22</sup> Kornblith 2002, 157.

<sup>23</sup> Ibid.

<sup>24</sup> Ibid., 158.

<sup>25</sup> Kornblith 1993, 107.

other hand, because truth underlies all of our localized pragmatic concerns, we can infer that it is a universal epistemic value. Kornblith rightly acknowledges that “prescriptive categories need not answer to anything that actually exists in the world at all. The categories in which we couch our normative theories...need not be held hostage to any description of the actual causal structure of the world”.<sup>26</sup> Yet in order for knowledge (understood as truth-approximating, rather than literally true) to play the causal role that it does in human and non-human animals, is a more substantial bond between descriptive and normative categories here implied?

Obviously the descriptive project constrains the normative project; this is one of the great lessons naturalists have taken from the failure of the standard analytic approach to epistemology. Kornblith seems to me to move in the opposite direction however: he implies that The World *must be this way* otherwise our knowledge would not be able to approach it. The World is *thus*, and our knowledge is *thus-like*. At the same time, his view is compatible with the view that different organisms have different ‘fits’ with the world. Different animals, including humans, have vastly different perceptual capacities, and these influence not only our subjective experience of the world but also the dimensions of reality with which our cognitive structures dovetail. This in turn implies a certain epistemic relativity, since each kind of organism – from single-celled amoebas to Sharks, from bats to humans, etc. – will know the world differently. Even if truth-conduciveness underlies all of the cognitive mechanisms that nature has evolved, the qualitative aspect of truth will be radically contingent on the circumstances of the particular type of

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<sup>26</sup> Kornblith 2002, 160.

organism. We cannot infer from epistemic relativity to ontological relativity, just as we cannot infer from descriptive cognitive pluralism to normative cognitive pluralism.<sup>27</sup> I think that this is a point that is often missed by philosophers. Many philosophers derive metaphysical positions from Hume's view of causality, for instance, without noticing that his argument against objective causal necessity proceeds no further than a denial that we can have sensory experience of the phenomenon of causality.

Kornblith appears to walk a fine line here, but I think this is simply because he does not devote any real attention to what Clarke calls "the fragmentation of knowledge".<sup>28</sup> "[T]here is no univocal natural kind that is knowledge"<sup>29</sup>; knowledge is many natural kinds. Rather, Kornblith's account gives the impression of an interspecies convergence-on-consensus. But such convergence is not implied by our ways of knowing; nor is there any biological rationale for it.<sup>30</sup> There may very well be no biological or conceptual consensus in the long run; the fragmentation of knowledge may be fractal.

The key point, however, is that differences in knowledge are no longer of kind but of degree. Different organisms have radically different representations of the world that correspond to differences in cognitive capacity, yet these capacities all have at least one thing in common: a propensity toward truth. It follows that we can learn about The World by understanding how other organisms interact with it. We can even learn useful bits of

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<sup>27</sup> Stitch 1990.

<sup>28</sup> Stitch 2004, ch. 6.

<sup>29</sup> Ibid., 145.

<sup>30</sup> Bradie, 166-69.

pragmatic knowledge from other species. Indeed, such practices surely have a better success rate than the many impossible epistemic proscriptions of traditional analytic epistemology.

### Bibliography

- Aristotle, *Nichomachean Ethics*, trans., T. Irwin, Hackett Publishing Company, 1999.
- Aristotle, *Politics*, trans., T. A. Sinclair, Penguin Classics, 1979.
- Bradie, Michael, "Epistemology from an Evolutionary Point of View", in *Conceptual Issues in Evolutionary Biology*, 2<sup>nd</sup> edition, ed., Elliot Sober, p. 453-76, Cambridge: MIT Press, 2001.
- Clarke, Murray, *Reconstructing Reason and Representation*, Cambridge: MIT Press, 2004.
- Descartes, Rene, *Discourse on Method*, in *Descartes Philosophical Writings*, trans., N. K. Smith, New York: Modern Library, 1958.
- Kheel, Marti, "From Healing Herbs to Deadly Drugs: Western Medicine's War Against the Natural World." in *Living with Contradictions: Controversies in Feminist Social Ethics*, ed., A. M. Jaggar, p. 650–657, Boulder: Westview Press, 1994.
- Kornblith, Hilary, *Inductive Inference and its Natural Ground: An Essay in Naturalistic Epistemology*, Cambridge: MIT Press, 1993.
- Kornblith, Hilary, *Knowledge and its Place in Nature*, Oxford: Clarendon Press, 2002.
- Mayr, Ernst, *What Makes Biology Unique?*, Cambridge University Press, 2004.
- Sorabji, Richard, *Animal Minds and Human Morals: The Origins of the Western Debate*, New York: Cornell University Press, 1993
- Stich, Stephen, *The Fragmentation of Reason: Preface to a Pragmatic Theory of Cognitive Evaluation*, Cambridge: MIT Press, 1990.
- Wilson, Margaret Dauler, *Ideas and Mechanism: Essays on Early Modern Philosophy*, Princeton University Press, 1999.