Knowledge and its Place in Nature
by Hilary Kornblith

Chapter 2: Knowledge as Natural Phenomenon
In this chapter Kornblith turns to the study of animal cognition. Why?
The reason is that ethologists are interested in the question how animals come to know things about their environment.
It is important to begin this chapter with the awareness that naturalists and non naturalists tend to have different intuitions regarding the question whether animals can have knowledge.
- Naturalistic intuition: Yes. Humans are animals and they have knowledge. Why shouldn’t other animals have knowledge, too?
- Non naturalist intuition: No. Knowledge requires capacities only humans manifest, specifically language and rationality.
Kornblith first observes that ethologists routinely describe the behavior of animals in intentional terms, and notes that this is not due to being sloppy or anthropomorphic, but because the complexity of animal behaviors, in hunting for example, can not be expressed adequately without reference to intentional states: plans, goals, desires, knowledge.

Kornblith notes that this does not prove that animals have such states, but it places the burden of proof for those who believe otherwise.

Note that even this burden-shifting gambit is likely to be denied by strong non naturalists, because they do not see the goal of inquiry as justifying current usage, but of correcting it when it goes astray. They would be inclined to say that scientists may appropriate these terms and use them however they wish for empirical inquiry, but that has nothing to do with the fundamentally a priori question of the nature of knowledge.
Consider Bernd Heinrich’s observations that ravens work together to distract animals from their prey in order to steal it. A strict logical behaviorist would say that this is really not an appropriate way to describe the activity of the ravens. Specifically, the term “distraction” implies that ravens have a theory of mind; i.e. that they actually know that if they do certain things to the fox it will momentarily forget about it’s prey. They would say that ethologists should simply describe the physical movements of the birds (one dive-bombing the fox, the other taking the food, etc.) without gratuitously attributing mental states.
Behaviorist critique continued

- Before discussing Kornblith’s reply to this it’s important to be aware of the power of the criticism.
- The fact is that science itself has progressed largely by refusing to explain the world in intentional terms. For example, the typical layperson’s understanding of evolution is that nature actually selects one trait for survival over another, because it is more fit than the other.
- Evolutionary theorists are forever reminding us that this is just a way of talking, and that part of the power of evolutionary theory is that it attributes no purposes to nature at all.
- So it is not in any way an essentially anti-naturalistic position that warns us against the misappropriation of intentional states.
Kornblith’s response

- That said, Kornblith points out that raven behavior is just too complex to be adequately comprehended in non intentional terms. It fails just as it fails for humans.
- To see this point, think of two humans cooperating to pick someone’s pocket. One distracting the victim with an unusual event, the other going in for the pick.
- The point is that there are so many ways of going about this basic task, that describing each one purely in terms of physical motions would actually prevent us from understanding what is going on. There is no interesting similarity between all the methods understood purely at a physical level.
- The behavioristically inclined might respond that this is true of humans, but not true of ravens. Kornblith’s response is: how do you know? That’s not what the people who actually study ravens say.
Another way of talking about animal behavior is in terms of possessing information about the environment.

For example, ants and many other animals can search rather randomly through their environment for prey, and then make a beeline home. They do this by the method of dead-reckoning, which essentially consists in having a mental record of their path, and then using that information to calculate a direct route home.

It’s a pretty astonishing capacity that forces us to acknowledge that, in some sense, animals can do math.

Obviously, they can’t solve math problems explicitly the way (some) humans can. But it is not clear whether this distinction should be permitted to inform our intuitions concerning the truth value of claims like:

- The ant knows how to get back to the colony.
Animal representations

- Human brains seem to have capacities that other animals don’t, but insofar as we do a lot of the same things, we probably do them in roughly the same way.

- For example, both predatory animals and humans hunt for prey. There is really no way to understand the capacity for this activity except by virtue of possessing an internal representation of the environment that allows the animal to track and predict the behavior of it’s prey and it’s companions.

- The capacity to construct an employ an internal representation of the environment is what’s needed to justify intentional descriptions of behavior.

- Korblith contrasts this with plants, which superficially seem to “desire to” grow and face toward the sun. Plants do not possess an internal representation of their environment, and that is why their behavior is simple enough to be described in non intentional, and non informational terms.
Kornblith emphasizes that the distinction between creatures that use internal representations and things that don’t has nothing to do with classical mind/body dualism.

There is nothing non physical about internal representations. However, they do explanatory work that explanations purely in terms of physical interactions can not.

This returns us to the point made earlier. Representations among different animals and species may be physically heterogeneous. Just as two plans to steal food may have very little in common in purely physical terms, mental representations in different species may have little in common as well. Still, by rising to the level of information and representation, we can explain disparate physical systems using the same basic principles.
The Cartesian Legacy

- You may be aware that Descartes believed that animals did not have any internal states. He basically thought that a dog is a kind of furry machine that is, among other things, constructed to make a loud squealing sound if you step on it’s foot. That all basically comes from believing that the special cognitive capacities of human stems from possessing a God-given mind substance that other creatures don’t have.

- Descartes’ view strikes most people today as goofy (Though it is probably just a matter of where you draw the line. Do you think spiders have feelings, for example?) But Kornblith points out the Cartesian legacy is still with us insofar as the standard scientific bias has been to systematically underestimate the cognitive capacities of animals and human infants.
This, Korblith explains, is due to an acquired fear of overestimating these capacities, a childish tendency we typically describe pejoratively as *anthropomorphism*.

Psychologists have typically discounted the reports of parents and pet owners, for example, as due to projecting their own cognitive and emotional capacities onto their loved ones.

Kornblith isn’t making any kind of moral criticism here. He is just pointing out that the arc of discovery in science has, in fact, been the discovery that both animals and human infants have much greater information processing power than previously imagined.

You can connect this back to the Blank Slate hypothesis as well. Of course it will be surprising to find infants doing complex computational tasks if you think their minds have basically no internal structure when they are born.
Folk psychology redux

- Kornblith cites Sara Shuttleworth as a scientist who warns us against anthropomorphism and who explains the human tendency to be anthropomorphic by reference to the efficacy of folk psychology.
  - “Understanding the behavior of other people as the expression of an underlying belief or intention is part of folk psychology…Folk psychology is a useful predictor of other people’s behavior, and it may have evolved for that reason. Generalizing to other species can be a useful informal way of predicting behavior, too. A tendency to apply folk psychology to animals could be a human adaptation for hunting and evading predators.
Chimps will extend their hand toward an experimenter to get food, but they don’t do this if the researcher’s back is turned, which suggests that they understand the cognitive conditions required to communicate information with hand signals.

But if it were true that chimps know how eyes work, then we would expect them to treat a researcher who is blind-folded or who has a bucket on their head the same, and this turns out not to be the case.

So, in fact it may be anthropomorphic to attribute second-order mental states (i.e., mental states about mental states) to chimps.

But Kornblith does not think this example vindicates Shuttleworth’s general position. In fact, he thinks it is clear that the research into second-order mental states stipulates that chimps have first-order mental states. For example, they know whether a researcher is facing them or not and they know that this makes a difference as far as getting a treat is concerned.
Knowledge vs. belief

- Animals clearly have the ability to create internal models of their environment and use these models to determine the way home, to distract predators from eating their young, etc.
- Philosophers and behavioristically inclined scientists are reluctant to call these representations “beliefs” because we tend to think of beliefs as having an essentially propositional, or linguistic structure.
- So we might say that while plovers are remarkable in their ability to distract predators from their nests by feigning a broken wing, they do not actually have the belief “dragging my wing like so will save my babies.”
Kornblith notes with interest that animal researchers aren’t themselves much inclined to attribute beliefs to animals, but they are very much inclined to attribute knowledge to them.

To put it starkly, they might say that while the plover does not literally believe that ravens are a threat to their young, they do know it.

From a traditional philosophical perspective, this is actually nonsensical: if knowledge is necessarily justified true belief, then it follows logically that nothing incapable of beliefs is capable of knowledge.
Knowledge vs. belief in psychological explanations.

- As Kornblith sees it, the key to understanding why researchers need to attribute knowledge to animals is in appreciating different levels of explanation.
- If we are explaining the behavior of an individual, there is really no need to talk about anything but its internal representations. This is true of our explanations of people as well as animals.
- Let’s stipulate, for example, that you know that drinking coffee can help keep you awake. Suppose we ask the question:
  - Why does Jake drink coffee?
- It doesn’t aid our causal explanatory purposes to say:
  - Jake drinks coffee because he wants to stay awake and he knows coffee will help him stay awake.
- It’s the belief, not the knowledge, that causes Jake’s behavior.
Individuals vs. species

- The key to understanding the explanatory role of knowledge is in the distinction between explanations of individual behavior and explanations of the capacities of species.
- In the latter case, the fundamental question is:
  - How did species x develop this behavioral capacity?
- And the basic form of the answer to this question is that this behavior was conducive to survival in its environment.
- The distinction between knowledge and belief here is essential. For beliefs that misrepresent the environment will typically not be conducive to survival.
A standard response to this line of reasoning is that even at the level of species the attribution of knowledge states to animals is anthropomorphic. To understand the cognitive capacities of animals we only need to attribute a capacity to form accurate representations (true beliefs) of the environment. But there is more to knowledge than this. Specifically, the true beliefs must be justified, and non human animals simply do not have the capacity for justification.
The naturalist rejoinder

- So now we are at a critical moment in the development of the naturalist perspective.
- The naturalist responds to this point by agreeing that knowledge is not simply true belief. The important point of intuitive agreement here is that beliefs that are just accidentally true are not knowledge.
- Analogy: Actions that accidentally turn out for the best aren’t good.
- Where naturalists and non naturalists part company is in how they account for the non accidental aspect of knowledge.
Justification vs. reliability

- For the naturalist, knowledge is not about justification, but reliability.
- The plover knows that dragging its wing will distract the fox, not because it is justified in this true belief, but because this belief has been produced by a reliable process, namely a process that selects beliefs for their representational accuracy.
- For a Kornblithian naturalist, then, knowledge is not
  - justified true belief; rather it is
  - reliably produced true belief.
Kornblith identifies two main commitments of the naturalistic account of knowledge:

- The best explanation of an animal's cognitive capacities is that
  - (1) they were selected for and
  - (2) they were selected specifically for their informational accuracy.
Problem 1: Crude adaptationism

- Kornblith notes that there are a couple of standard criticisms of this view.
- The first problem, emphasized by evolutionary biologists, is that not all traits are selected for; i.e., they are not all adaptations to the environment.
- Many traits are what Stephan Jay Gould calls “spandrels”. This is an architectural term referring to the space created by an arch. An evolutionary spandrel is a trait that exists simply because it piggybacks on a trait that actually was selected for.
- Kornblith’s response to this is that adaptationist explanations are still the rule in evolutionary biology, and this one is certainly plausible.
Problem 2: Nature doesn’t care about truth.

- The second problem noted by Kornblith is that evolutionary biology explains the existence of traits on the basis of reproductive fitness, not truth.
- What this means is that if a false belief insures reproductive success, it will be selected for over a true one.
- For example, the belief that all mushrooms are deadly may confer an evolutionary advantage insofar as it protects one from the one or two deadly mushrooms that are difficult to distinguish from the benign ones.
- Kornblith’s response to this is just that these are interesting exceptions to the rule that informational accuracy typically promotes survival. Just as the occasional lie can serve ones interests within the general context of a truth-telling community, an occasional error can serve ones interests in the context of a basically accurate information processing system.
Kornblith ends this chapter by saying a bit about what he means by claiming that knowledge is a natural kind.

The simplest way to understand this claim is that knowledge refers to a stable (homeostatic) cluster of properties that features prominently in causal explanations and predictions.

For Kornblith, knowledge is a homeostatic cluster of properties, reliably produced true belief, that figures into our explanations and predictions of animal behavior.
A problem for reliabilism?

- Kornblith considers an interesting criticism of the reliabilist analysis given by Robert Brandom.
- Brandom’s basic claim is that knowledge is not a natural kind because the reliability of a process is essentially relative to the environment in which it occurs.
- Here’s a joke to get us started:
  - A scientist and an epistemologist are sitting on a bench when a train carrying carloads of sheep rumbles by.
  - The scientist says: I say, those sheep have just been shorn.
  - To which the epistemologist replies:
  - Well, on this side, anyway.
Brandom’s argument

- Brandom formulates his arguments in terms of barn facades. Imagine a man, Boris, who spotting a barn on a clear day says “I say, there’s a barn”.
- Assuming that Boris has barnspotting competence, we would tend to say that the process that produced this belief is reliable.
- But now suppose that Boris does not realize that the majority of things that look like barns in this part of the county are actually barn facades.
- So now we would say that Boris just got lucky, and in fact the process that led him to believe that he was looking at a barn is not reliable at all.
- But now suppose that the majority of things that look like barns in the whole tri-county area really are barns.
- Now we’re back to saying that the process is reliable again.
- Brandom’s has two points to make here:
  1. Whether we call a process reliable depends on the reference class with respect to which we evaluate that process. Relative to this part of the county, the process is reliable. Relative to the whole tri-county area, the process is quite reliable.
  2. There is no objective basis for choosing one reference class over another. Hence, reliability is not a relation to be found in the world, but one that is ultimately relative to our interests. This point is meant to defeat Kornblith’s view that reliability is a natural kind.
Kornblith’s reply to Brandom

- Kornblith’s reply is basically that the interest relativity of the reference class doesn’t defeat the view that reliability is a natural kind.
- It only means that when we assess the reliability of a process we are really assessing it’s reliability:
  - for this type of creature
  - in this type of environment.
- This holds for lots of perfectly objective relations. For example:
  - A substance is carcinogenic only for a particular type of creature in a particular type of environment.
  - A gene expresses itself only in a particular environment under highly specific conditions.