

Innate Knowledge

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Philosophical Concept

If innate knowledge exists, there must be innate beliefs and those beliefs must count as knowledge. In consequence, the problem of clarifying the concept of innate knowledge divides in two: to explain what it is for a belief to be innate and then to connect that account with a characterization of what knowledge is. Modern biology requires changes in traditional philosophical conceptions of innateness; and two quite different theories of knowledge entail that innate beliefs will often fail to count as knowledge.

1. Innateness

Within some species of bird, individuals produce their characteristic song even if they are reared in silence. Among others, a bird sings its song only if it first hears that song performed. And among still others, a bird produces its characteristic song only if it hears some sort of song or other (Gould and Marler 1991). We are inclined to apply the concept of innateness to the first type of bird and to withhold it from the second. But what of the third? Should we say that these birds learn their songs by hearing any of a set of quite dissimilar songs? Or should we say that the song is innate – that it is ‘in’ the bird, only awaiting an environmental trigger for its release? Both options seem unsatisfactory. How can a given song be learned from hearing a quite different song, if the target song would have emerged regardless of which song the bird had heard? The option of judging the song innate also has its pitfalls. What does it mean to say that the song is ‘in’ the bird from the start? This spatial metaphor sounds suspiciously like the preformationist doctrines of eighteenth century embryology, according to which foetal development simply involves an increase in size of the fully formed individuals found in newly fertilized eggs. Arguably, the song is ‘in’ the bird from birth no more than adolescent pubic hair is ‘in’ a new-born baby.

It is important not to confuse the claim that the song is ‘in’ the bird from birth with the much less controversial claim that the new-born bird is disposed to acquire the song once the bird passes various developmental landmarks and experiences various environmental cues. The latter claim does not entail the former. Indeed, the latter formulation offers a completely de-natured reading of the idea of innateness; it becomes trivially true that all beliefs are innate. Surely this formulation short-circuits the controversy rather than solving it.

(In Notes on a Certain Program, Descartes suggests that ideas are innate in precisely the same sense that diseases are sometimes innate; this does not mean that foetuses suffer from diseases *in utero*, but that individuals are born with a certain ‘disposition’ to contract them. The challenge to innatism, laid down by Locke in the Essay Concerning Human Understanding, is to explain what ‘disposition’ means so that some traits, but not others, turn out to be innate. Leibniz takes up this challenge in the New Essays.)

Contemporary biology does not exploit the philosopher’s traditional distinction between innate and learned. First of all, the biological opposite of innate is not ‘learned’, but ‘acquired’. Learning is one way to acquire a characteristic, but there are others; sunburns are acquired, but they are not learned. It is worth asking what distinguishes learning (and *mislearning*) from other processes of belief acquisition; if beliefs could be acquired by swallowing pills, arguably that would not count as learning. In any event, the present point is that biologists do not think of ‘innate’ and ‘learned’ as exhaustive alternatives.

Perhaps the most important contrast between the biological and the traditional philosophical concept is that biology does not treat the difference between innate and acquired as a dichotomy; rather, it is a matter of degree. Traits differ with respect to how dependent their emergence is on environmental details. The three groups of birds described before can be arrayed on a continuum; there is no need to draw a line that separates two of them from the third.

It is also important to distinguish the initial appearance of a trait from its subsequent maintenance. A trait may emerge across a wide range of environments and yet be modifiable once in place. For example, an Egyptian vulture, when first confronted with an ostrich egg and a stone, will break the egg with the stone. However, if the vulture repeatedly discovers that the eggs it breaks open are empty, eventually it will stop breaking eggs (Pulliam and Dunford 1980). In this case, the behavioural disposition might be termed innate. All the same, ‘innate’ does not mean ‘unmodifiable’.

Yet another gap between the traditional philosophical concept and modern biology concerns the issue of universality. Philosophers often expect innate beliefs to be universal in our species; they are part of ‘human nature’ and so should be present in all individuals who have enjoyed a normal development. (Thus we find Locke, in the Essay (bk I, ch. III, §§8–18), arguing that the idea of God is not innate because it is not found in children and ‘savages’.) A related expectation is that if two people have a trait, then the trait must be innate for both if it is innate for either. Neither of these assumptions is unproblematic. The biologist’s concept of a ‘norm of reaction’ describes how the phenotype which a genotype will develop depends on the environment it experiences. For example, consider a particular fruitfly genotype; let us ask how that genotype’s attainment of a particular phenotype (for example, bristle number) depends on some environmental variable (for example, nutrition). Different genotypes often exhibit different

degrees of environmental contingency with respect to the same phenotype. One fruitfly genotype may produce the same bristle number regardless of variation in nutrition, whereas another may produce different numbers of bristles in response to different amounts of food. Because of this, it is quite possible for two flies to have the same number of bristles, but to have achieved that result by quite different developmental pathways. Bristle number may be 'innate' for one and 'acquired' for the other.

In view of all this, it is a reasonable hypothesis that the most that can be salvaged from the ancient concept of innateness is this: *a phenotypic trait is innate for a given genotype if and only if that phenotype will emerge in all of a range of developmental environments*. What counts as the appropriate range of environments is left open in this proposal. Perhaps there is a uniquely correct answer to this question; then again, maybe the range is determined pragmatically. It is difficult to see how the latter conclusion can be evaded.

2. Innateness and the a priori

The above definition opens a large gap between the concepts of innateness and a prioricity. A proposition is a priori if it can be known or justified independently of experience (see A priori). A prioricity does not concern what causes an organism to formulate a belief; rather, it has to do with the status the belief enjoys once it is formulated. Arguably, the belief that all bachelors are unmarried is not innate; it emerges in some social and linguistic environments, but not in others. Still, once an individual has this belief, it may be true that the belief can be justified without appeal to experience.

Conversely, it is also possible for a belief to be both a posteriori and innate (see A posteriori). Perhaps human cognitive development inevitably leads people to believe that a physical world exists external to their own minds. This is as natural and invariant a developmental outcome as the acquisition of pubic hair during adolescence. Yet, it remains for the philosopher to judge whether solipsism is a priori false. Perhaps our natural anti-solipsism is either unjustifiable or is justifiable as an inference to the best explanation; maybe the postulate of an external world makes sense because it explains regularities that obtain in the flow of experience. If so, we would have here the case of an innate belief that is a posteriori (see Inference to the best explanation).

3. Knowledge

If we have beliefs whose emergence is relatively invariant across a range of developmental backgrounds, will those beliefs count as knowledge? To begin with, if S knows that p , then p must be true. Beyond that, what does knowledge require? Let us explore the suggestion that S 's belief that p counts as knowledge only if S is justified in believing p .

The justification that S has for believing p presumably must come from other beliefs (or thoughts or sensations) that S has. In particular, it is not enough that those other beliefs (or other items) bear some abstract relation of justification to the proposition p ; after all, it might be true

that S believes q and that q is evidence for p even though S believes p for no reason at all or for bad reasons. What is required is that S 's belief in p be related 'in the right way' to S 's justifying belief in q .

What might this right way be? One possibility is that S 's belief in q causes S to start believing p . Another is that S continues to believe in p because S believes q . A third is that S 's belief in q makes it harder for S to stop believing p . The list could continue (see Justification, epistemic; Knowledge, concept of §§1–6).

Regardless of how this condition is interpreted, it seems clear that innate true beliefs can fail to count as knowledge. Consider a belief that people inevitably have and cannot abandon; perhaps our spontaneous anti-solipsism is an example. Such propositions may admit of inventive justifications, but this does not mean that philosophical pronouncements can influence whether ordinary folks believe in an external world.

Let us turn, instead, to a concept of knowledge that abandons the requirement of justification. Reliability theories of knowledge demand that the act of believing should be related to the world in the right way. If S knows that p , then it must be true that, in the circumstances that S occupied, S would not have believed p unless p had been true. If S knows that p , then the requirement is that the probability that p is true given that S believes that p , is equal to 1.0. S must be a perfectly reliable detector of the truth of p , if S 's belief that p is to count as knowledge (Dretske 1981) (see Reliabilism).

It is easy to see why an innate belief can evolve so as to violate the requirement that the probability that p is true given that S believes that p , is equal to 1.0. For example, suppose that snakes are usually, although not always, dangerous. An organism that confronts a snake thus faces a problem of decision-making under uncertainty. It can believe without further ado that the snake is dangerous; or, it can try to find some further observational evidence on which to base its decision. In the former case, the organism might have the innate belief that snakes are dangerous. In the latter, its opinion will depend on the details of present and past experience.

Imagine that the organism in question is not very good at determining from observable cues whether a snake is dangerous. Imagine further that the organism does better by erring on the side of caution (Stich 1990). If the snake is dangerous, it is very important to believe that this is so; but if the snake is not dangerous, it is of much smaller moment whether one realizes this fact. These assumptions all favour the evolution of the innate belief that snakes are dangerous. Innateness will be a better strategy than learning in this instance (Sober 1994).

Notice that the factors that predict the evolution of innateness provide no guarantee of the reliability of the resulting beliefs. The organism believes of each snake encountered that it is

dangerous. The organism therefore has true beliefs only as often as snakes in fact are dangerous. This need not be a terribly high frequency; it clearly need not equal 100 per cent. For this reason, it is easy to see how innate beliefs can fail to count as knowledge from the point of view of the reliability theory of knowledge. Indeed, there is no guarantee that the belief must be true more often than not; pervasive error may be a consequence of the evolution of innate beliefs.

References and further reading

Descartes, R. (1648) Notes on a Certain Programme, in *The Philosophical Works of Descartes*, trans. E.S. Haldane and G.R.T. Ross, Cambridge, Cambridge University Press, 1931, 431–450. (Descartes responds to various misunderstandings of his views, including his position on innate ideas.)

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(Argues that the dispute between empiricists and rationalists should be understood in terms of whether various simple beliefs are learned or triggered.)

Gould, J. and Marler, P. (1991) 'Learning by Instinct', in D. Mock (ed.) *Behavior and Evolution of Birds*, San Francisco, CA: Freeman, 4–19.

(Describes a variety of learning strategies that birds use to acquire their songs.)

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(Point-by-point commentary on Locke's essay by the greatest exponent of continental rationalism.)

Locke, J. (1689) *An Essay Concerning Human Understanding*, ed. P.H. Nidditch, Oxford: Clarendon Press; New York: Oxford University Press.

(The founding document of British empiricism, accessible to the general reader.)

Pulliam, H. and Dunford, C. (1980) *Programmed to Learn*, New York: Columbia University Press.

(Argues that different learning strategies will evolve depending on how the environment is structured.)

Sober, E. (1993) *Philosophy of Biology*, Boulder, CO: Westview Press.

(Clarifies concepts such as norm of reaction and heritability.)

Sober, E. (1994) 'The Adaptive Advantage of Learning and A Priori Prejudice', in *From a Biological Point of View: Essays in Evolutionary Philosophy*, Cambridge: Cambridge University Press.

(Presents an evolutionary model for predicting when a proposition will be an innate belief and when it will depend on experience for its emergence.)

Stich, S. (1975) *Innate Ideas*, Berkeley, CA: University of California Press.

(Anthology of historical and contemporary essays, some of which address issues concerning Chomskian linguistics. Of special interest are the essays by A. Goldman relating the causal theory of knowledge to the question of whether innate beliefs can count as knowledge; by W. Hart, arguing that innateness is irrelevant to the issue of a priori knowledge; and by S. Stich, which proposes a clarification of what innateness means.)

Stich, S. (1990) *The Fragmentation of Reason*, Cambridge, MA: MIT Press.

(Argues that evolutionary considerations make it plausible to suspect large amounts of irrationality and unreliability in belief formation.)

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