

# The Definitive "Are Beavers Born With The Innate Disposition To Build Dams, Or Do They Learn It From Older Beavers?" Thread

Post by "Cassius" of July 7, 2024 at 7:32 AM

In the discussion of prolepsis, I - for one - regularly throw around the supposed "example" that beavers are born with the innate disposition to build dams, and that this is not "learned" after birth from their parents. The assertion would imply that while this behavior may be amplified from watching others after birth, it is not primarily dependent on observation after birth, and that baby beavers separated from older beavers at birth would still build dams.

Pretty obviously the truth or falsity of this assertion bears on the issue of exactly what kind of behaviors are transmitted genetically over generations, and plays into the whole "blank slate" controversy. If beavers are born with certain types of behaviors being innate, then it's not much of a leap to consider that humans are too.

There are probably lots of other significant examples, but Beavers really stand out as dramatic examples which capture the imagination. 😊 It therefore probably makes good sense to focus on them as a litmus test example - if beavers can be established to have this disposition programmed into them before any personal exposure of any kind to prior dam-building, then I would think most all the other alleged examples of genetic dispositions in the natural world will be correspondingly easy to accept - or harder to accept if innate beaver dam-building is a myth.

We've discussed this in the forum on the past, primarily in the thread I will link below. Some links were produced, primarily by Don if I recall correctly, but i don't recall that we found any kind of "gold standard" article from a respected publication or source that really nailed down the question with persuasiveness. And I also know that some people dispute the contention that beavers are "born" with this behavior programmed in them, and they consider the assertion to be totally false.

Thus this thread is born. Every time we discuss anticipations/prolepsis we come around eventually to dealing with this question of what in fact we are able to observe in nature as to whether "patterned" behavior is totally learned after birth, or is partially encoded in our genetics. The title of this thread will hopefully make it more findable on the future when we need these sources. So as time goes by, I would appreciate it if those of us who are interested in this question could use this thread to collect the best links which bear on it, positively or negatively. If this is true, let's embrace it, if it's false, let's blow it out of the water.

Post

**RE: Is There A Relationship Between "Anticipations" and "Instinct"?**

(Since I am suggesting we always ought to be planning our seminar presentations)

[...]

On the symbolism of pigs/hogs I think there is some material which help explain the reference. We surely know it it existed from the Boscoreale cup and the Horace reference. I think there is a church father comment also referencing it in which hogs are cited as pursuing pleasure singlemindedly.

Numerous animals would work for the others but any that are known for their instinctive behavior, beavers and their...



Cassius

April 23, 2021 at 5:23 AM

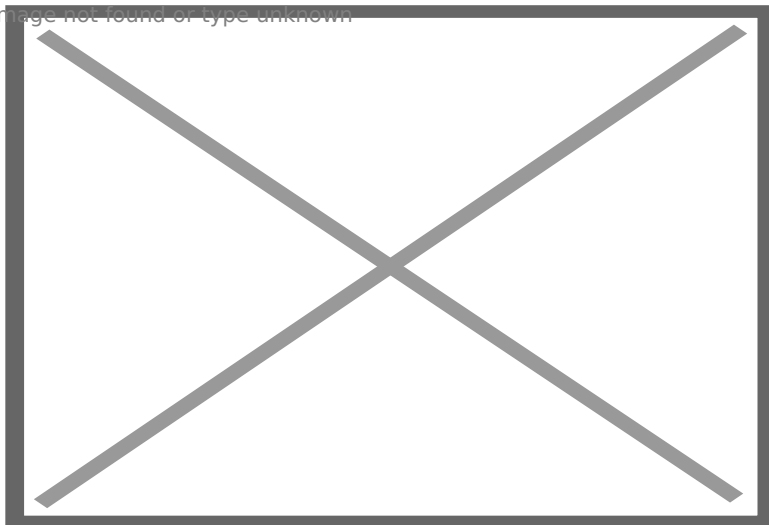
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**Post by "Cassius" of July 7, 2024 at 7:34 AM**

Don's previous suggested threads:

<https://home.uchicago.edu/~rjr6/articles/Instinct--Encyclopedia%20of%20Animal%20Behavior.pdf>

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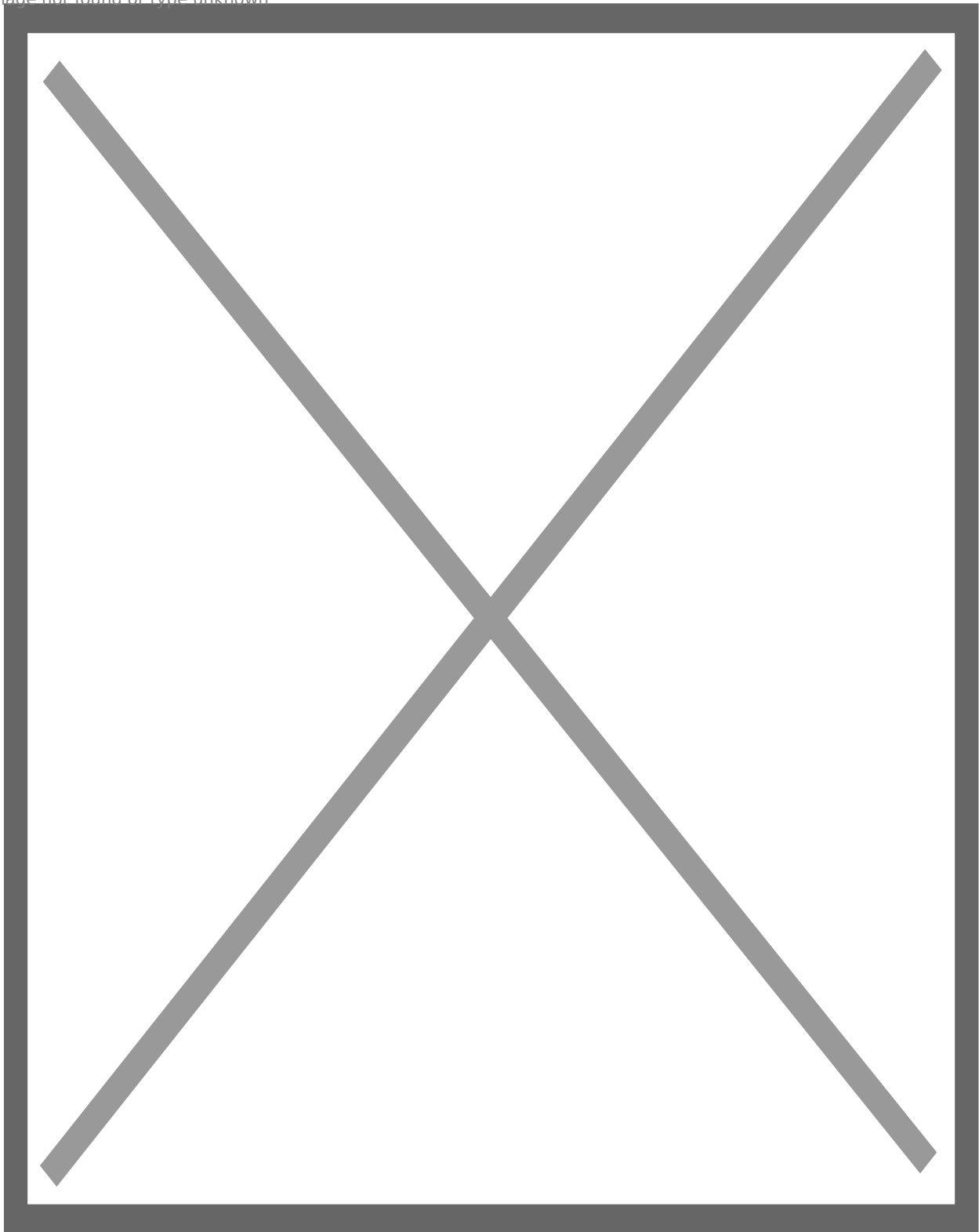


<https://www.epicureanfriends.com/thread/3953-the-definitive-are-beavers-born-with-the-innate-disposition-to-build-dams-or-do/>

[Animal Instincts: Not What You Think They Are](#)

Marc Bekoff explains how many different animal species show grief, friendship, gratitude, wonder, and a range of other emotions.  
greatergood.berkeley.edu

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[The Sound of Running Water Puts Beavers in the Mood to Build](#)

This one weird trick can help you exploit a beaver's natural instincts.

<https://www.epicureanfriends.com/thread/3953-the-definitive-are-beavers-born-with-the-innate-disposition-to-build-dams-or-do/>

Note also: The article on "the sound of running water puts beavers in the mood to build" might also be an example of how outside influences trigger resulting behaviors, as seems to be a part of the "image" theory.

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## **Post by "Cassius" of July 7, 2024 at 7:37 AM**

The University of Chicago article ends as written below, and its overall tone and content appears to me to reinforce the position of something like: "Beavers *are* born with innate dispositions to build dams, but the more exposure they have to their groups while growing up the better they build."

At this moment I would say that of the three cites above, the University of Chicago article appears most persuasive, while the other two articles are more "fluffy." However even the University of Chicago article is more of a "history of science" approach than a "this is what was found in laboratory tests under controlled conditions" approach. It would be highly desirable to find instances of the latter.

## **The Contemporary Resolution:**

Three basic positions have been taken on animal instinct. From Descartes through the early work of Lorenz, instincts were understood to be constituted by chains of reflexes that respond to certain environmental releasers. James Watson, B. F. Skinner, Z. Y. Kuo, and other behaviorists in the first part of the twentieth century rather attempted to account for apparently fixed patterns of behavior by appeals to subtle modes of conditioning. The later Lorenz and evolutionary biologists like Ernst Mayr (1904–2005) established the third and most recent conception of instinct, one that recognized the role of genetically determined, species-specific information as well as the environmental conditions required for the implementation of the information. Mayr epitomized this recognition in his proposal that two kinds of programs governed animal behavior, a more closed program and a more open program (Mayr 1974). Closed programs were those in which the releasing mechanisms were controlled by the genome of the species, such as mate recognition and display in many animals. For instance, fertile female *Drosophila* of one species, if reared in isolation and placed among males of several species that displayed to her, would unerringly receive only the male of her own species. However, freshly hatched graylag goose chicks would follow any object of the right size, if exposed to the moving object (e.g., Lorenz's head while swimming) during a critical period in the young gosling's life. The chicks rapidly learned the stimulus that released the fixed behavior of following. In some species of bird, a chick raised with chicks of a different species

would imprint on the foster species and attempt to mate with its members. These cases of imprinting represent a more open program. The mechanisms of instinct, therefore, differ depending on the species of animal and the relative open or closed character of the program. Most behavior biologists today recognize these different instances of instinctual modes of behavior and have thus revitalized the instinct concept.

Springer International Publishing AG, part of Springer Nature 2018, Jennifer Vonk and Todd Shackelford

Encyclopedia of Animal Cognition and Behavior

10.1007/978-3-319-47829-6\_1064-1

Instinct

Robert J. Richards

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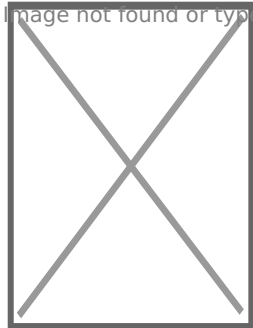
## Post by “Cassius” of July 7, 2024 at 8:03 AM

I see references to someone named Lars Wilson studying this, but the references look questionable:

[Running water is sound of spring for beavers | Juneau Empire - Alaska's Capital City Online Newspaper](#)

And this one is not in English:

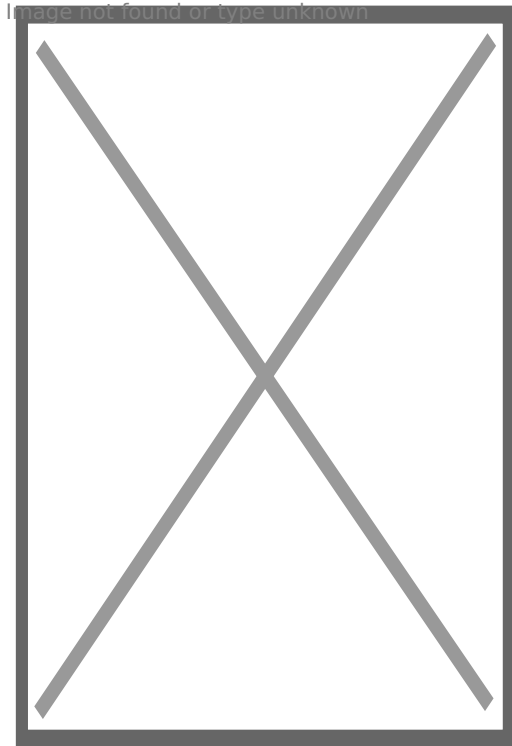
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[Observations and Experiments on the Ethology of the European Beaver "\(castor Fiber L\)"](#)  
books.google.com

## Post by "Cassius" of July 7, 2024 at 8:06 AM

I would find it helpful to pin down Richard Dawkins' views on this, since I generally consider him to be a source of credible and well thought out positions:



[The Extended Phenotype - Wikipedia](https://en.wikipedia.org)  
en.wikipedia.org

Dawkins proposes there are three forms of *extended phenotype*. The first is the capacity of animals to modify their environment using *architectural constructions*, for which Dawkins provides as examples [caddis houses](#) and [beaver dams](#).

Edit: I've never heard of a "[caddis house](#)."

Caddisflies are best known for the portable cases created by their larvae. About thirty families of caddisfly, members of the suborder Integripalpia, adopt this stratagem. These larvae eat [detritus](#), largely decaying vegetable material, and the dead leaf fragments on which they feed tend to accumulate in hollows, in slow-moving sections of streams and behind stones and tree roots. The cases provide protection to the larvae as they make their way between these resources. [\[25\]](#)

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The case is a tubular structure made of [silk](#), secreted from salivary glands near the mouth of the larva, and is started soon after the egg hatches. Various reinforcements may be incorporated into its structure, the nature of the materials and design depending on the larva's genetic makeup; this means that caddisfly larvae can be recognised by their cases down to family, and even genus level. The materials used include grains of sand, larger fragments of rock, bark, sticks, leaves, seeds and mollusc shells. These are neatly arranged and stuck onto the outer surface of the silken tube. As the larva grows, more material is added at the front, and the larva can turn round in the tube and trim the rear end so that it does not drag along the substrate. [\[25\]](#)

Caddisfly cases are open at both ends, the larvae drawing oxygenated water through the posterior end, over their gills, and pumping it out of the wider, anterior end. The larvae move around inside the tubes and this helps maintain the water current; the lower the oxygen content of the water, the more active the larvae need to be. This mechanism enable caddisfly larvae to live in waters too low in oxygen content to support stonefly and mayfly larvae. [\[22\]](#)

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### **Post by “Eikadistes” of July 7, 2024 at 9:09 AM**

I think I saw that this is purely an automatic, instinctual response to acoustic stimuli:

Beavers start instinctually damming pathways when they hear running water. If you put a beaver in a suburban house, and run the faucet, it will grab clothes and shoes and toys and dam a hallway.

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### **Post by “Cassius” of July 7, 2024 at 9:13 AM**

Yep, it seems likely that flowing water triggers the immediate action. By why is the reaction "build a dam" rather than "run away" like most other animals would do when "triggered" by something with which it is not familiar? It seems to me the deeper we look the more certain it is going to be that a significant amount of this is "instinct." Would a baby spider separated from its kind never build a web? I would think it would -- maybe not as good a web, but still a web.

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### **Post by “Bryan” of July 7, 2024 at 10:23 AM**

<https://www.epicureanfriends.com/thread/3953-the-definitive-are-beavers-born-with-the-innate-disposition-to-build-dams-or-do/>

It almost seems that the idea of instinct was wrapped into the idea of determinism, which loomed so large that Epicurus feels he needs to assert that we are not all instinct -- but have something in ourselves that can generally transcend instinct.

Epicurus, Peri Phýseōs, Book 25, P.Herc. 1056 col. 21 (fr. B 43): [Sedley] From the very outset we always have seeds: some directing us towards these, some towards those, some towards these and those actions and thoughts and characters, in greater and smaller numbers.

Epicurus, Peri Phýseōs, Book 25, P.Herc. 1056 col. 22 (fr. B 44): [Sedley] by which we never cease to be affected, the fact that we rebuke, oppose and reform each other as if the responsibility lay also in ourselves, and not just in our congenital make-up and in the accidental necessity of that which surrounds and penetrates us.

Epicurus, Peri Phýseōs, Book 25, P.Herc. 1191 fr. 115/116: [Sedley] If someone won't explain this, and has no auxiliary element or impulse in us which he might dissuade from those actions which we perform, calling the responsibility for them 'our own agency' - but is giving the name of foolish necessity to all the things which we claim to do calling the responsibility for them 'our own agency' - he will merely be changing a name. He will not be modifying any of our actions in the way in which, in some cases, the man who sees what sort of actions are necessitated regularly dissuades those who desire to do something in the face of compulsion. And the mind will be inquisitive to learn what sort of action it should then consider that one to be which we perform in some way because of us ourselves but without desiring to.

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## **Post by “Joshua” of August 29, 2024 at 2:00 AM**

Beavers are discussed on this episode of QI starting at around 34:07.

Also make sure you watch the quantum levitation experiment at 35:40!

<https://www.dailymotion.com/video/x8gwtah>

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## **Post by “DaveT” of June 26, 2025 at 3:06 PM**

I'm continuing to try to understand the significance of this discussion within Epicurean prolepsis. Wikipedia search link below says: "Mammalian instinct refers to innate, genetically programmed behaviors essential for survival and reproduction, exhibited by mammals without

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prior learning, and often triggered by specific environmental cues or internal signals."

It is a biological event formed by natural selection only. No thinking is involved.

[Google Search](#)

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### **Post by "Rolf" of June 26, 2025 at 3:17 PM**

Going off of what Dave said, would it be reasonable to equate prolepsis with instinct?

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### **Post by "Bryan" of June 26, 2025 at 3:41 PM**

I think of a prolepsis as a 'mental sense' -- what comes to mind when you think of something.

Just as you use your eyes to look at a tree, you use this mental sense to *begin* thinking about a tree.

You can use your eyes to look at a statue of a unicorn -- and you have an anticipation in your mind of what a unicorn should look like.

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### **Post by "Martin" of June 27, 2025 at 4:11 AM**

Quote

would it be reasonable to equate prolepsis with instinct?

No because there are also acquired variants of prolepsis. In a recent video call, I mentioned reflexes as similar examples for innate prolepses. However, Epicurus used prolepsis as a standard of truth. Both instincts and reflexes are about automatic behavior, and not about truth. Therefore, it might be wrong to call instincts or reflexes prolepses.

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## Post by "Cassius" of June 27, 2025 at 5:45 AM

### [Quote from Martin](#)

Therefore, it might be wrong to call instincts or reflexes prolepses.

I would emphasize the "might" there, as there may be a relationship of some kind (at the very least, both seem to be related to something that is present at birth, prior to all experience through ears and eyes and the rest). However what I think would definitely be wrong would be to "equate" the two, because they pretty clearly are not exactly the same in all respects and functions.

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## Post by "DaveT" of June 27, 2025 at 6:41 AM

I've been searching for a way to clarify for myself when or how Epicurus viewed the concept of prolepsis, I went to the Internet and Google's free AI, Gemini. It gave citations to back up its response, which I can paste into this discussion if anyone would like to see them.

Can our better educated friends here, give a deeper analysis of the response I got to my query; "prolepsis as discussed by Epicurus"? The answer it gave is in **bold**.

**In Epicurean philosophy, *prolepsis* (plural: *prolepseis*) is a fundamental concept in their theory of knowledge, serving as one of the three criteria of truth, alongside sensations (*aisthêsis*) and feelings (*pathê*).**

**Here's a breakdown of prolepsis as Epicurus understood it:**

**\* *Meaning:* Prolepsis translates to "preconception," "anticipation," or "pre-notion." It refers to a basic, general concept or idea that has been formed in our minds through repeated sensory experiences.**

**\* *Formation through Experience:* Epicurus was an empiricist, meaning he believed that all knowledge ultimately derives from the senses. Prolepseis are formed when repeated sensory inputs of a certain kind leave a lasting impression or "trace" in the mind. For example, by repeatedly encountering dogs, we form a prolepsis of "dog" - a general idea of what a dog is.**

\* **A Criterion of Truth:** Prolepseis are considered self-evident and true. They act as a foundational, clear understanding against which we can evaluate new perceptions and opinions. When we encounter something new, we can refer back to our prolepsis to help us recognize and categorize it. If a new perception aligns with a relevant prolepsis, it is more likely to be true.

\* **Precondition for Thought and Language:** Prolepseis are essential for rational thought and language. Without these pre-existing general notions, we wouldn't be able to name things, understand concepts, or engage in meaningful discourse. For instance, to understand the word "man," we must already have a prolepsis of what a man is.

\* **Solution to Plato's Meno Paradox:** Epicurus' concept of prolepsis offered a solution to Plato's paradox in the *Meno*, which questioned how one could learn something new if they didn't already have some prior knowledge of it. Prolepseis provide this "pre-knowledge" or "preliminary concept" that allows us to recognize and learn.

\* **Not Innate in the Platonic Sense:** While sometimes referred to as "innate," Epicurean prolepseis are not innate in the Platonic sense of being divinely implanted or pre-existing before experience. They are formed through a physiological, empirical process of repeated sensory input.

\* **Role in Understanding Abstract Concepts (like the Gods):** Even for abstract concepts like "gods," Epicureans believed we form prolepseis. Our prolepsis of the gods, derived from common human experience and the appearance of living, blessed beings, leads to the Epicurean understanding of gods as tranquil, immortal, and not interfering in human affairs.

In essence, Epicurean prolepsis highlights the importance of direct sensory experience in shaping our fundamental understanding of the world, providing the building blocks for all subsequent knowledge and thought.

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## Post by "Cassius" of June 27, 2025 at 6:55 AM

My first comment would be that this synthesis is a complete adoption of the Diogenes Laertius position, which does not reflect the implications of what Cicero/Velleius says about it as being innate. It is difficult or impossible to reconcile it with what Epicurus says about prolepsis of the gods - Do we have a preconception of gods because each individual personally sees gods so many times?

My statement there doesn't mean that I have concluded that it is entirely wrong, just incomplete, especially if you take a very superficial reading of "Epicurus was an empiricist, meaning that he believed that all knowledge ultimately derives from the senses." At the very least, does instinctive behavior ultimately derive from the senses? I would say no to that and I think Epicurus would too, for which I would cite Lucretius' reference to the natures of various types of animals.

Quote

\* **Meaning:** Prolepsis translates to "preconception," "anticipation," or "pre-notion." It refers to a basic, general concept or idea that has been formed in our minds through repeated sensory experiences.

\* **Formation through Experience:** Epicurus was an empiricist, meaning he believed that all knowledge ultimately derives from the senses. Prolepseis are formed when repeated sensory inputs of a certain kind leave a lasting impression or "trace" in the mind. For example, by repeatedly encountering dogs, we form a prolepsis of "dog" - a general idea of what a dog is.