Episode 166 - The Lucretius Today Podcast Interviews Dr. David Glidden on "Epicurean Prolepsis"

Post by “Joshua” of July 20, 2023 at 7:36 PM

In light of this recent thread I have decided to give another listen to this episode, and am slowly developing a better understanding of what is going on with the word 'cognition'. Dr. Glidden expressly contrasts the cognitive with the physiological. In humans it's difficult to demarcate these two faculties, in part because they are very intertwined.

But taking a lower order of life like the spider plant on my balcony, I can make several observations. Does it experience sensation? I suspect so. My balcony faces northeast, and that is the direction sunlight comes from. Not direct sunlight--my spider plant will never "see" the sun where it sits, but enough filters through by reflection and refraction for the plant to make do.

And here's the thing; when the spider plant sends forth a new shoot, it tends invariable toward the light. In a phenomenon called Heliotropism, some plants will actually track the sun from east to west throughout the day. No brain, no thought or cognition, no language--and yet the plant senses light and heat and responds to stimuli with primitive cellular motor function. The process, from beginning to end, is physiological.

What about prolepsis? In the well-known and charismatic Venus Fly-Trap, it is an electrical impulse passed from the trigger hairs on each of the lobes that 'tells' the midrib of the plant to close the trap. The process again is physiological and noncognitive. Too physiological? Maybe. It could be argued that a merely physical process, like gently tapping the keys on a piano, is too noncognitive to really count as pattern recognition. After all, that last word is "re-cognition".

But if you look at plants on the cellular level, what you will observe is the faculty of these cells to recognize patterns associated with perceived threats and dangers--a faculty that allows the cells to respond to the threat and mitigate the damage.

The threat in this case is microbes, and it is an immune response that the pattern recognition triggers. To quote Wikipedia;

> Quote
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> Pattern recognition receptors (PRRs) play a crucial role in the proper function of the innate immune system. PRRs are germline-encoded host sensors, which detect molecules typical for the pathogens. They are proteins expressed, mainly, by cells of

> the innate immune system, such as dendritic cells, macrophages, monocytes, neutrophils and epithelial cells, to identify two classes of molecules: pathogen-associated molecular patterns (PAMPs), which are associated with microbial pathogens, and damage-associated molecular patterns (DAMPs), which are associated with components of host's cells that are released during cell damage or death.

If a molecule with the pattern of a threat bumbs up against a PRR, the host organism's cells will initiate the immune response. But here's the thing; just as it's possible to mimic the pattern of a fly by triggering the hairs of a venus fly-trap, it would be possible for a molecule to trip a PRR by having the pattern of a microbe without actually being one.

Do we consider this a primitive form of prolepsis? Let's review the components:

- Initial sensory contact. Like a human seeing a curvy stick on the forest floor, a venus fly-trap or Pattern Recognition Receptor in the cell registers a sensory impulse.
- The sensory impulse is "identified" (in purely physiological terms) as matching a "known" pattern--like a key sliding into a lock. The stick sends an impulse to our brain, and some twitching neuron somewhere fires--SNAKE!
- The organism responds both to the stimulus and to the pattern recognition. This part is essential--a fructose molecule could bump against a PRR all day long, providing the sensory impulse, but not register as a known pattern. It alone would not trigger the organism's response. The pattern recognition is essential. We jump back from the stick, only to discover cognitively that it's just a stick after all.

I think I would call this a kind of prolepsis.

One further consideration. Does prolepsis lie? Can it be wrong? It depends on what we mean by 'wrong'. I might define prolepsis--sensation->pattern->response--as an "anticipation made noncognitively in advance of more complete information". It's certainly true that the stimulus whose pattern we recognize will very often turn out to be caused by something else. A stick, not a snake. A feather, not a fly. A fructose molecule, not a dangerous microbe.

But was the pattern recognition ITSELF a lie? I think not. A curvy stick does have the same pattern as a snake to the sense of vision. My opinion is that prolepsis is true to the cause because the cause IS the pattern. The stick-ness or snake-ness of the stick or snake is something we grasp cognitively and express and understand using language. But the pattern is the pattern--evaluating whether it's been rightly identified in the light of future evidence or further knowledge is quite beside the point. That process is cognitive--this process is physiological.

So that's where I find myself right now.