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## Pythagoras and the Swerve

*By Hiram Crespo, editor.*

In recent weeks, I held a private conversation (and there was a public conversation also in our forums) with an Epicurean who was turned off by what he perceived as the “dogmatism” of some of the more “orthodox” voices in our tradition (if there can be such a thing in a heterodox philosophy), things like their unwillingness to accept the theory of the Big Bang because it contradicted our doctrine about the universe having existed forever. The important thing to accept as an Epicurean is that, whatever shape the Universe takes in terms of time and size, the proper explanation is always naturalist and never supernatural. On this we must coincide to remain within the bounds of our tradition.

Two other perceived instances where Epicureans might be unorthodox deal with accepting some degree of determinism and with accepting some form of a mathematical (neo-Pythagorean) cosmology, including insights from the field of quantum physics.

While it is true that Pythagoras was as much a mystic as he was a mathematician and philosopher, we should at least concede that nature does exhibit mathematical “skills” in a manner of speaking. Isaac Newton demonstrated that there are definite equations that apply to gravity and to mass; that nature’s laws can be translated into precise, discoverable mathematical equations.

Recent research on plants that time their consumption of starch in expectation of the next sunrise also shows that plants have an anticipation that is tied to the circadian rhythms of day and night. Many reptiles are also attuned to the circadian rhythms, as this is vital for organisms that are cold-blooded and cannot regulate their body temperature at night, when it’s colder. Many organisms (including humans) also tie their fertility seasons with the lunar cycles. Corals, for instance, release their eggs at a very precise moment in the lunar calendar.

These types of adaptations require the bio-mechanical equivalent of a clock, and require mathematics. Nature had to observe these cycles through the faculties of living entities, and then compute the ideal timing for the behaviors crucial to their survival. **Nature does math.**

Pythagorean ideas related to musical harmony and math might also help to explain research on how chanting and sound meditation affects the brain. Many religious traditions employ mantra *technology*, if I’m allowed that

word, to produce blissful and serene states of meditative trance, but these practices have always been enveloped in mysticism. Recent developments in the field of neuroplasticity prove that contemplative practices have a much stronger scientific base than they've ever been given credit for. Chanting is not only soothing and pleasant (and should therefore should be a subject of research for those of us who wish to understand the science of hedonism), it also creates long-term changes in the brain and actually has medicinal and analgesic effects.

While we are grateful to the Pythagoreans and the mathematicians for their useful insights into the nature of things, ultimately when we deconstruct reality, there are atoms and void, not numbers. Reality is still, fundamentally, material. Atoms and elements and the things that they compose can be oftentimes discerned and studied mathematically, and that is as far as Pythagoreanism takes us. Math, like reason, only works when it has legitimate raw data discerned through the senses and empirical methods.

As for natural (as opposed to theological) theories of determinism, we must first contextualize Epicurus' role as a moral reformer by understanding that he emerged from the early school of atomists that believed in a purely mechanical cosmos. The atomists understood the universe as a machinery of eternal causation. Chance was impossible in this early scientific cosmology.

*Nothing occurs at random, but everything for a reason and by necessity.* - Leucippus, Democritus' associate and co-proponent of the original atomist doctrine

Hence, Epicurus saw the need for a theory of chaos, some kind of break in the chain of causality that would account for the evident volition and innovation that we see around us, particularly among living entities who have the power to change their environment and to make moral and creative choices. This he called the swerve. The important thing about the swerve is it attempts to explain how there are sometimes things that happen without a cause, without mechanically depending on the laws of nature.

This does not mean that some things aren't determined by nature. In a strict sense, Epicureans are really compatibilists. Strict determinism renders the cosmos a tyrant that rules over automatons, while strict non-determinism renders the laws of nature impossible to discern. None of these two views really works when we study the nature of things. It would be impossible to study nature's laws if there didn't exist predictable patterns: two members of one species will invariably mate to produce a third, never a member of another species. Gravity will pull us. Stars will engage in nuclear fusion. These things are determined.

What we rebel against is the belief that our destinies are determined by the movements of the stars or the whims of spirits and gods; that Krishna established the caste system in the Bhagavad Gita; that Jehovah established the perpetual slavery of women in Genesis to punish Eve's transgression; that Allah established shari'a laws by which society must be governed; that our lives are and must be ruled by unnecessary restrictions and ancient taboos that are beyond reproach. These things are not determined by the laws of nature. They are forms of cultural corruption.

The swerve is more than the random movement of an atom, or the random mutation of molecules within a gene that happens naturally in every generation, or the sudden decision by a primate to begin fashioning a new tool. Epicurus saw a **cultural determinism** that claimed to be natural, an inertia, a program that benefited certain groups, a series of unchallenged false premises that the mobs were governed by and that he wanted to emancipate men from. He saw these false views lucidly for the superstitions that they were. He saw that these premises had no legitimate scientific foundation. So he named this spark of freedom without which we would be robots.

His swerve is why we must own our creation as ethical agents rather than give credit to nature for everything that we do, for good or ill. It's how natural beings can be civilized, and—more importantly—free.

Epicurus battled another moral evil: false prophets who instill fear and awe in credulous people. Insofar as the world is deterministic, prophecy is possible. We can safely utter the prophecy that tomorrow the Sun will rise. We can predict how many minutes there will be in the day and in the night in different parts of our globe. There is research on the nature of things that gives us this information. But we can not know the time and circumstances of our death or other future events with absolute certainty. We can not know the future choices that our children will make, much less predict a cataclysm at the end of the world from the vantage point of a Bronze Age worldview, or via psychic abilities. Only through telescopes can we detect potential meteors and such things, and only in modern times.

If Thales was able to predict a lunar eclipse, it's because generations of Babylonian astronomers had studied the movements of the stars and, after careful and diligent observations, developed calendars and mathematical models of such movements. With a proper understanding of the nature of things we learn that prophecy can only emerge from scientific insight, and that it's not supernatural.

While there is research that seems to indicate that some people have a pre-natal impulse that leads to alcoholism or even to depression, to violence, or to becoming a serial killer, we must again return to our comment on how naturalist prophecy relies on empirical observation of the nature of things. Furthermore, there are limits to the ability to prophesize about choices made by free agents. We must consider improbable any theory that certain choices are inevitable in view of our current inability to travel back in time and attempt to orchestrate different outcomes in a given story-line. We can fairly conclude that John Doe is likely to have an addictive or violent personality because of his genes (at least until we develop the gene therapy to treat it), but not that he will abuse his wife, or kill his neighbor, or specifically become a heroin addict.

Epicurus championed the use of knowledge to spiritually and ideologically liberate humanity from a state of primal fear, inertia, and ignorance. The swerve can be understood as the philosophical equivalent of Prometheus' theft of the Gods' fire. Like all living entities, humans have the power to change their environment, and the more we learn about the nature of things and the more science we acquire, the more radically we are free to transform our environment.

*Epicureanism runs on friendship (philos).* – Norman Dewitt

In the extant fragments left by our founders we see Epicurus and Polyaeus, who was himself a mathematician, arguing about whether there was heat in wine, proposing various theories, and exchanging differences of opinion.

Very few doctrines characterize Epicurean "orthodoxy", if understood only on dogmatic terms. But our tradition is not mere doctrine: its most important consolations derive from solidarity and affiliation (philos). Our tradition is an ancient and ever-evolving series of **conversations between friends** that began with our founders, and that is nurtured by continued wholesome association. Seen in this light, the Epicurean who understands the spirit of true philosophy simply enjoys the pleasure of the discourse, and the mellows of friendship, unperturbed by our differences of opinion.