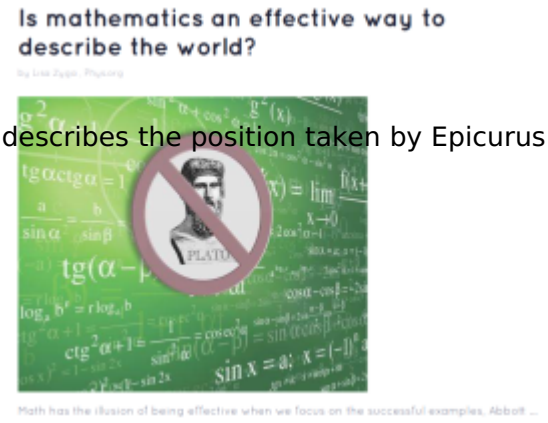
A Call For Links On The Relationship of Mathematics and Geometry to Reality (and Epicurus' view of the issue)

Post by “Cassius” of August 1, 2019 at 10:58 AM



From the look of this excellent graphic, this article describes the position taken by Epicurus on the issue of Math vs Reality. It ends with something that sounds consistent with Epicurus to me: "For Abbott, these points and many others that he makes in his paper show that mathematics is not a miraculous discovery that fits reality with incomprehensible regularity. In the end, mathematics is a human invention that is useful, limited, and works about as well as expected."

I am posting this not only for discussion of this article but to ask that if you know of other well-stated articles which take a similar position, that you drop us a link so we can compile a list of reference cites. So if you are aware of others, please post here, and we'll work on more material about this issue in the future.

https://phys.org/news/2013-09-m…tive-world.html

Post by “Cassius” of August 1, 2019 at 11:03 AM

Which is opposed to THIS, which is what Epicurus was fighting against:

Post by “Cassius” of August 1, 2019 at 1:03 PM

I've now read the full physics . org article and think it is good. I want to track down the full Abbott article to which it refers. But as I read this, the logical conclusion is:

There's no real difference in kind between (1) the most complicated 2019 NASA formulas that calculate the size and movement and composition of the sun and (2) a Roman centurion pointing at the sky and saying 'the sun is a ball of fire that rises and sets on the horizon every day."

Both are simply human expressions / symbolic mental summaries of our own observations and they have no direct connection whatsoever to the reality of the sun and its workings. Unless we are astronauts the Roman centurion's observation were as useful to him as a NASA equation is to most of us. And if we happen to be among those NASA scientists (if there are any) who think that our formulas have some kind of mystical divine connection to some external ultimate reality, then we've actually regressed in 2000 years. If we think our math is the key to the meaning of life we're **less** intelligent than the Roman centurion who considered his description of the sun as all he needed to plan the campaigns of his legion.

Martin would you agree?

Post by “Cassius” of August 1, 2019 at 5:24 PM

Full Derek Abbott paper here: https://ieeexplore.ieee.org/document/6600840

Lots of good stuff in it:

"Hamming's paper marvels on how complex numbers so naturally crop up in many areas of physics and engineering, urging him to feel that “God made the universe out of complex numbers” [3]. However, for the engineer, the complex number is simply a convenience for describing rotations [7], and, of course, rotations are seen everywhere in our physical world. Thus, the ubiquity of complex numbers is not magical at all. As pointed out by Chappell et al. [8], Euler's remarkable formula $e^{-j\pi}=-1$ *is somewhat demystified once one realizes it merely states that a rotation by* π *radians is simply a reflection or multiplication by* -1."

Post by “Cassius” of August 1, 2019 at 9:23 PM

Martin K. posted:

Hartry Field is the best modern exponent of the fictional nature of maths. He has written extensively on it. The monograph Science Without Numbers [Oxford University Press: 2016] being the best.

I'd also politely point out Aristotle was the first person in human recorded history to expressly adopt this position. He is the original anti-Platonist. Another talking point between the Epicurean and Aristotelian we have in common.

“The next point to consider is how the mathematician differs from the student of nature. For natural bodies contain surfaces, volumes, lines and points, and these are the subject-matter of mathematics. Now the mathematician, though they too treat of these things, do not treat them as the limits of a natural body. Nor do they consider the attributes indicated as the attributes of such bodies. That is why they separate them. For in thought they are separable from change and it makes no difference nor does any falsity result if they are separated. The holders of the theory of the forms do the same, though they are not aware of it.”

[Natural Puzzles 2:2, 193b 23-36]

Maths is abstracting real qualities from physical items “by supposing separate what is not separate.”

[After the Of Nature, 13:3 couched in an extended discussion at 1077b21-1078a31]

It is an interpretative tool helpful for solving problems — not the study of a distinct realm of real non-physical phenomena.

Post by “Cassius” of August 5, 2019 at 3:01 PM

Poster: Max Tegmark promotes the idea of a Mathematical Universe in his homonymous book. He uses the concepts introduced to discuss the meaning of Multiverse and to what extent we can test the premises that would validate its existence. Here's a talk he gave on the topic https://www.youtube.com/watch?v=_3UxvycpqYo\

And in response to that is this: https://www.math.columbia.edu/~woit/wordpress/?p=6551