

"All Models Are Wrong, But Some Are Useful"

Post by "Joshua" of January 22, 2024 at 12:04 AM

Einstein on mathematics:

Quote

One reason why mathematics enjoys special esteem, above all other sciences, is that its laws are absolutely certain and indisputable, while those of all other sciences are to some extent debatable and in constant danger of being overthrown by newly discovered facts. In spite of this, the investigator in another department of science would not need to envy the mathematician if the laws of mathematics referred to objects of our mere imagination, and not to objects of reality. For it cannot occasion surprise that different persons should arrive at the same logical conclusions when they have already agreed upon the fundamental laws (axioms), as well as the methods by which other laws are to be deduced therefrom. But there is another reason for the high repute of mathematics, in that it is mathematics which affords the exact sciences a certain measure of security, to which without mathematics they could not attain.

At this point an enigma presents itself which in all ages has agitated inquiring minds. How can it be that mathematics, being after all a product of human thought which is independent of experience, is so admirably appropriate to the objects of reality? Is human reason, then, without experience, merely by taking thought, able to fathom the properties of real things?

In my opinion the answer to this question is, briefly, this:—As far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality.

This entails, among other things, dismissing a lot of what Plato thought was true about mathematics. If Euclid and others like him can derive from the basic axioms of geometry a profound understanding of its higher operations, can the philosopher working by analogy use pure reason to escape the cave of sensory illusion by taking hold of absolute truth? Just as all of math is innately embedded in its axioms, is all knowledge innate and all 'learning' merely rediscovery of what we knew before our souls were imprisoned in our sluggish flesh?

Epicurus is often criticized for his aversion to math. But his real distaste was for the kind of philosophy that used faulty assumptions about math and reason to arrive at conclusions that were divorced from reality.