



Math: Gift from God or Work of Man?

Mathematics, Religion and Evolution in School Curricula

COMMENTARY

By JOHN ALLEN PAULOS

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School begins again, and we read more about the intrusion of pseudoscience into school science curricula in this country, particularly into the study of biology and evolution.

The motive, despite the claims of proponents of intelligent design and other bogus "disciplines," has been religious. Although some of the creation scientists' arguments presented have a probabilistic flavor, the mathematics curriculum has seemed somewhat resistant to this trend. Recently a number of readers have sent me course descriptions from various schools that suggest otherwise, however.

The issue is complicated (perhaps too complicated for a column), but I'll also briefly discuss the relevance of evolution to a more defensible, but still flawed argument relating religion and mathematics.

Religion in the Math Curriculum

Consider first a Baptist school in Texas whose description of a geometry course begins:

Students will examine the nature of God as they progress in their understanding of mathematics. Students will understand the absolute consistency of mathematical principles and know that God was the inventor of that consistency. They will see God's nature revealed in the order and precision they review foundational concepts while being able to demonstrate geometric thinking and spatial reasoning. The study of the basics of geometry through making and testing conjectures regarding mathematical and real-world patterns will allow the students to understand the absolute consistency of God as seen in the geometric principles he created.

I wonder if the school teaches that non-Euclidean geometry is the work of the devil or at least of non-Christians.

The Web site's account goes on like this for a while and then is followed by similar descriptions for algebra and pre-calculus. The blurb for the calculus course states:

Students will examine the nature of God as they progress in their understanding of mathematics. Students will understand the absolute consistency of mathematical principles and know that God was the inventor of that consistency. Mathematical study will result in a greater appreciation of God and His works in creation. The students will understand the basic ideas of both differential and integral calculus and its importance and historical applications. The students will recognize that God created our minds to be able to see that the universe can be calculated by mental methods.

I don't know what books this particular school uses, but I should mention such risible texts such as "Precalculus for Christian Schools." The latter attempts to draw parallels between the fundamental theorem of calculus and the fundamentals of Christianity, between infinity and life after death, et cetera.

Everyone's heard of church schools and Madrassas, but another example of this phenomenon from a quite different religious perspective is the Maharishi University in Iowa, whose course titles and descriptions are similarly bizarre. Here are some on their Web site:

Infinity: From the Empty Set to the Boundless Universe of All Sets -- Exploring the Full Range of Mathematics and Seeing its Source in Your Self
Intermediate Algebra: Using Variables to Manage the Total Possibility of Numbers and Solve Practical Problems

Its New Age calculus sequence is described thus:

Calculus 1: Derivatives as the Mathematics of Transcending, Used to Handle Changing Quantities
Calculus 2: Integrals as the Mathematics of Unification, Used to Handle Wholeness
Calculus 3: Unified Management of Change in All Possible Directions
Calculus 4: Locating Silence within Dynamism

Evolution, a Counterargument to the Divine Nature of Mathematics

Of course, there are more sophisticated ideas that are vaguely similar, and there have been first-rate scientists who have taken mathematics to be some sort of divine manifestation. One of the most well-known such arguments is due to physicist Eugene Wigner. In his famous 1960 paper, "The Unreasonable Effectiveness of Mathematics in the Natural Sciences," he maintained that ability of mathematics to describe and predict the physical world is no accident, but rather is evidence of a deep and mysterious harmony.

But is the usefulness of mathematics really so mysterious? There is a quite compelling alternative explanation why mathematics is so useful. We count, we measure, we employ basic logic, and these activities are stimulated by ubiquitous aspects of the physical world. The size of a collection (of stones, grapes, animals), for example, is associated with the size of a number and keeping track of it leads to counting. Putting collections together is associated with adding numbers, and so on.

Another metaphor associates the familiar realm of measuring sticks (small branches, say, or pieces of string) with the more abstract one of geometry. The length of a stick is associated with the size of a number (once some segment is associated with the number one), and relations between the numbers associated with a triangle, say, are noted. (Scores of such metaphors underlying more advanced mathematical disciplines have been developed by linguist George Lakoff and psychologist Rafael Nunez in their book, "Where Mathematics Comes From.")

Once part of human practice, these various notions are abstracted, idealized and formalized to create basic mathematics, and the deductive nature of mathematics then makes this formalization useful in realms to which it is only indirectly related.

The universe acts on us, we adapt to it, and the notions that we develop as a result, including the mathematical ones, are in a sense taught us by the universe. That great bugbear of creationists, evolution has selected those of our ancestors (both human and not) whose behavior and thought are consistent with the workings of the universe. The usefulness of mathematics is thus not so unreasonable.

There are, of course, many other views of mathematics (Platonism, formalism, et cetera), but whatever one's philosophy of the subject, the curricula cited above and others like them are a bit absurd, even funny. In private schools they're none of our business. This is not so if aspects of these "creation math" curricula slip into the public schools, a prospect no doubt devoutly wished for by some.

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$$\{(a \vee \neg b) \wedge b, \neg a\}$$

$= 3.14159265$

$$\{(a \vee \neg b) \wedge b, \neg a\}$$

0.0001

Students will examine the nature of God as they

$$100\,000 / 10 = 10\,000$$

progress in their understanding
of mathematics.

Students will understand

$$350\,000 \times 35 = 12\,250\,000$$

They will see God's nature
revealed in the order

relation they review foundational
concepts in geometry.

The study of the basics