

Integrating



*God did create an orderly universe,
but after you make that observation,
is your math class any different from
the one being taught at the public
school down the block?*

Faith + Math

by David J. Huizenga

CONSIDER THE FOLLOWING CHRISTIAN SCHOOL math question: “Two apostles plus two apostles equals...?” Or for the more advanced student: “The Smiths have a family income of \$32,000 per year. Assuming that the income is tithed, how much does Mr. Jones put in the offering plate on Sunday each week?”

These examples of “integrating” the language of the universe with the Lord of the universe illustrate a common stumbling block for the Christian teacher of mathematics: each question merely couches standard, same-as-secular mathematics within a Christian vocabulary or experience. Both pagan and pious students who know how to calculate should arrive at identical answers. This type of “integration” simply places the realms of mathematics and Christian experience side-by-side. Rather than revealing a unity of Christ and mathematics, this approach may actually serve to distinguish Christ from mathematics.

Another common approach to math-faith integration is embodied in a statement such as this: “Mathematics reflects the orderliness of God’s creation and of God himself.” Unquestionably, the universe loudly proclaims its divine design; the fingerprint of the Lord’s creative word is unmistakable. And mathematics does offer humans the ability to precisely describe and employ the patterns and relationships (the orderliness) found in God’s creation. Through mathematics we may catch a glimpse of the nature of God himself.

Yet, is that all there is to say about mathematics and Christian faith? With all due respect to the marvelous truth of divine design, I have to confess that I want more! The orderliness of our Lord and his world can all too easily become merely a preface to a Christian school math class that in all other respects is the same as the math class at the public school down the block.

A fine Christian history teacher does not simply invite students to learn the facts of history because God is the source of history. That teacher will also seek to unveil for students the ever-present hand of God at work in each event, each move-

ment, and each relationship within the Sovereign’s plan for cosmic redemption. This, and nothing less, is what I want for my mathematics students—that their blinders may be removed, that they may see Christ within mathematics, and that mathematics will cohere and have purpose and beauty solely because our God ordains, sustains, and claims mathematics for his glory.

Such a lofty outcome may serve as an inspiring challenge, but the question still remains: How can a teacher authentically integrate faith and mathematics? I suggest two compass headings, or stepping stones, for teachers grappling with faith in the mathematics classroom: first, the beginnings of a biblical theology of mathematics, and second, several possibilities for unveiling Christ within the standard mathematics curriculum.

ACKNOWLEDGE OUR FRAME OF REFERENCE

A crucial foundation for attempting a biblical theology of mathematics is a sincere humility regarding our human, time-bound perception of the universe. For instance, let’s not be too quick to assume that the equation $2+2=4$ must be an eternal truth, a perfect or sufficient window into the attributes of God. Indeed, God has ordered the universe that we inhabit to unequivocally display that $2+2=4$. Such constancy is certainly a reflection of God’s unchanging righteousness and faithfulness. However, every mathematical truth that we know (including $2+2=4$) is apprehended from within the temporal, mortal, finite realm of human perception. God’s mathematics—outside the frame of reference of this universe—may actually reveal $2+2=4$ to be a dim or futile understanding, insufficient for divine calculation.

Let me illustrate the constraints of our human frame of reference with a common analogy. Imagine that if instead of three spatial dimensions (right-left, forward-backward, and up-down), the entire universe were two dimensional. Then everyone and everything would exist much like a drawing on a piece of paper. Not only would our sensory perceptions be limited to two dimensions, but so would our language and vocabulary. We would be unable to give a meaningful description of a third dimension because our frame of reference would provide no opportunity to perceive it or even conceptualize it.

Or consider Helen Keller's comprehension of "vision" and "hearing." Though touch and vibration formed invaluable analogies to vision and hearing, her sensory limitations certainly prevented her from having a full understanding of the realities of sight and sound. At the same time, her inability to perceive them did not in any way affect the fact of their existence.

Now back to mathematics and God's creation. We live and worship in three dimensions not because there can only be three spatial dimensions, but because God has created us to perceive three dimensions. In the mind of God, there may well be four or more spatial dimensions. Though it's universally true in our world that $2+2=4$, God's divine addition—outside the confines of our frame of reference—may be different, better, and beyond anything we can ask or imagine.

The crux of the matter of our human frame of reference is simply this: mathematical truth is created truth—divinely created, but nonetheless created. (If this were not true, then we would serve a God who in turn must serve and submit to mathematics.) Even mathematicians (or rather, especially mathematicians), with all our certainties of careful calculation and perfect proof, must bow in humility. Christ is the Lord of all that we know and of all that we don't know; he is the Lord of the universe and the Lord beyond the universe.

MATHEMATICS AND CULTURE

The evolving cultural perspective on mathematics has yet to embrace universal order as truth which is both divine and created. In the early seventeenth century Galileo insisted that mathematics is a "language" through which God created the universe; miracles are simply scientific vocabulary that humans have not yet learned. While Galileo's God can "say" anything he wishes within the language of mathematics, he is unable to

alter the alphabet. Sadly, this is a God who—until science catches up—merely knows more mathematics than we do.

The twentieth-century economist Milton Friedman summarizes the product of Enlightenment thinking with the assertion, "The only relevant test of the validity of a hypothesis is the comparison of its predictions with experience." This presupposition cannot be reconciled with a God outside our mathematical frame of reference, a God unfettered by the bounds of his created cosmos. Instead of God speaking mathematics, this Enlightenment God simply is mathematics.

Contemporary author James Bailey presents the postmodern perspective

when he says, "The whole evolution of mathematical vocabulary from geometry through algebra and now into adaptive intermaths reflects the slow, grudging relaxation of the human need for constancy." No longer do humans stand in awe of the deity of Enlightenment mathematics; rather, mathematics has become the utilitarian servant of personal desire. Absolute Truth (the "human need for constancy") is not despised; rather, truth seems to be irrelevant to many people today. The postmodernist doesn't care about mathematical Origin or Purpose, so long as the computer receives enough data to track a stock portfolio or predict sunshine for tomorrow's parade.

The Bible on Mathematics

The following familiar passages yield a solid footing for the math classroom.



John 1:1–3, 9–10

- Like all things created, mathematical order has its source in Christ.
- The Word gives light to everyone (secular mathematics recognizes order and pattern), but the world does not recognize the true Light (the Source and Purpose of mathematics).

Romans 1:18–21

- God has made it plain; mathematical knowledge is given by God.
- The world knows mathematics but does not glorify God with it.

Psalms 19:1–4

- Mathematics is general revelation.
- As a universal language, it is a unique cross-cultural witness.

Hebrews 1:1–3

- Christ is not only the source but also the heir of mathematics (the limit, the domain and the range).
- Christ is also the Sustainer, the present-tense coherence of all mathematics.

Colossians 1:15–17

- As Christ is the embodiment of the invisible God, so the application of mathematical principle (invisible) must be Christ-like (redemptive).
- The coherence of mathematics in Christ is a universal counter to entropy.

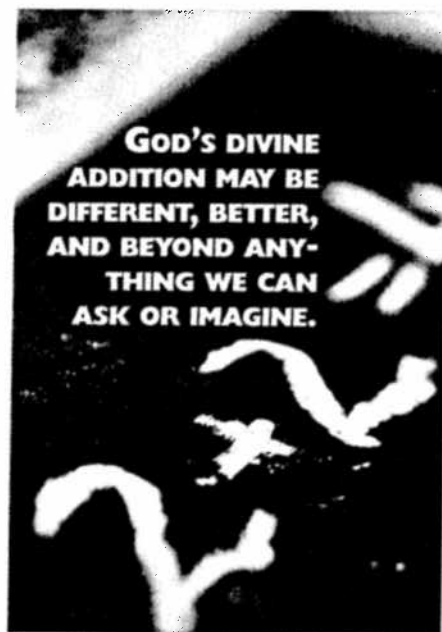
MATHEMATICS AND THE WORD

Scripture articulates a dramatically different perspective on absolute Truth, universal order, and human understanding (see box). Of particular note is the truth that in Christ, mathematics coheres—present tense. As Colossians 1:16–17 states, “For by him all things were created: things in heaven and on earth, visible and invisible, whether thrones or powers or rulers or authorities; all things were created by him and for him. He is before all things, and in him all things hold together.” Secular mathematicians are willing to admit that we all must accept fundamental postulates (or at least the consistency of the natural numbers) without proof. As a Christian, I am delighted to point out to my students that this means that all mathematicians, whether they admit it or not, are people of faith. But there is more: Christ holds together not only our foundation (that is, our postulates); he is also the present tense cohesion of all our building blocks (that is, our theorems and our conclusions).

This humbling truth means that even reasoning and logical thinking have ongoing reliability only because Christ lives. The certainty of any mathematical conclusion is therefore based not only on long-accepted presuppositions, but also on the moment-by-moment truth that Christ holds all things together. Praise the Lord!

HOW THEN SHOULD WE TEACH?

The divinely designed mathematical relationships of the universe must be clearly distinguished from our human descriptions of them. If students were asked to play word association with the term “math,” all too many might produce answers like “Greek letters,” “pocket protector,” “calculator,” and even “nerd.” Sadly, none of these offerings are associations with the relational truths of God’s universe, but with our human attempts at discerning those



truths. One way to counter these often-crippling associations is to present a single mathematical truth with varying human descriptions. Why not try shapes or colors or brand name logos for variables instead of English and Greek letters? How about bringing a mathematically astute basketball coach into the math classroom as a guest lecturer on parabolic trajectory?

“An ounce of understanding is worth a ton of memorization.” I have posted this motto on my classroom wall not only because it reflects solid pedagogy but also because it reflects sound theology. Allowing students to merely memorize mathematical processes leaves them to ponder only the human description (the notation) of divine truth. When we insist (by the very way we structure lessons and assignments) that students attain and display a measure of real understanding of mathematical relationships, we bring them into contact with divine truth and beauty.

The purposes of mathematics can clearly distinguish the Christian school classroom from its secular counterpart. Too often, secular academia worships mathematics as a manipulable god;

math is useful for predicting and controlling natural phenomena for selfish gain. In contrast, Christian students must learn to recognize mathematics as a tool for redemption; mathematics must direct us toward the Creator rather than toward the created.

One specific method I have used to encourage students to recognize this control-redemption distinction is a “Math Abuse” board at the back of the classroom. Students receive extra credit for spotting abuses (not simply unintentional errors) of mathematics in the media. The advertising industry provides ample material; typical examples include an ad for light bulb inserts that “save you 320% on your electric bill” and a bar graph (comparing truck resale values) in which the vertical axis begins at 80% instead of 0% (and is not indicated except in fine print).

Euclidean and non-Euclidean geometries offer some of the most rewarding opportunities for authentic integration of faith and mathematics. Students grapple with undefined terms and accepted postulates (faith!). They can distinguish consistency (human experience and Euclidean geometry) from certainty (divine Truth, including the unprovable possibilities of a non-Euclidean universe). Of the many possible springboards for discussion in geometry class, one of my favorites is this: “State two postulates from which the entire Christian faith can be derived.”

More than anything else, Christian teachers of mathematics must intentionally and passionately place before their students the Word of God. Beyond a devotional or an opening prayer, we must search for and unveil Christ in every concept, every formula, every proof, every operation. May our students then “forget the channel, seeing only him.” ♦

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