Reflections Upon the Relationship Between Mathematical and Biblical Truth

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The works of the LORD are great, studied by all who have pleasure in them (Ps. 111:2).

Christian institutions of higher education are understandably concerned with "the outrageous idea of Christian scholarship" (Marsden) and many regularly conduct self-examinations and solicit advice from other institutions that have achieved some degree of success in their integration of faith and learning. Since God as the Creator is the source of all wisdom and knowledge (Prov. 2:6), and this wisdom and knowledge is displayed in Creation (Ps. 19:1-4) and is found in all its fullness in Christ (Col. 2:1-3), perhaps no division of faith and learning, i.e., distinction between sacred and secular thinking, should have been made in the first place. Acknowledging that such a gulf exists, however, whether or not of artificial origin, the Christian educator is compelled to *bridge the gap*, i.e., to demonstrate how various academic pursuits fit into a life of faith and how God is best glorified in the exercise of one's vocation. As the astronomer, Kepler observed in his later years, "I had the intention of becoming a theologian … but now I see how God is, by my endeavours, also glorified in astronomy, for 'the heavens declare the glory of God'." (Lamont, p.23)

Much of my life has been devoted to mathematics, a discipline not generally regarded as a platform for the definitive proclamation of one's Christian faith (indeed, many people tell me that it is their worst subject). However, as a Christian I am continually amazed that not only does mathematics permeate our physical universe, but the pages of Scripture and our understanding of God, as well. Pursuit of mathematical truth parallels theology; mathematics reflects the divine nature; mathematical concepts pervade Scripture; and biblical arguments follow the same rules of logic that are foundational to mathematics. My approach, then, to *bridging the gap* is not to somehow *Christianize* mathematics or to *quantify* Scripture; it is simply to observe the strong connections between mathematics and biblical truth that are readily apparent.

Mathematical Truth and Theology

First of all, a willing and unqualified assent to basic truths is necessary to both mathematics and theology. Through the instrument of *faith*, God pleases to reveal Himself to man in the person and work of Christ (Rom. 1:16, 17); and *without faith it is impossible to please Him* (Heb. 11:6). This faith, of course, *is the gift of God, not of works, lest anyone should boast* (Eph. 2:8, 9). Blaise Pascal readily acknowledged the necessity of such divine assistance in understanding the hidden things of God. "To lend full certainty to those matters which are incomprehensible to reason, it suffices to point to where they are found in the Sacred Books… because its principles are superior to nature and to reason, and, the mind of man being too feeble to attain them by its own efforts, it cannot reach up to those lofty thoughts, unless it is sustained by a strength which is all powerful and supernatural." (MacKenzie, p.70)

Such unconditional acceptance of fundamentals is also essential to the study of mathematics. The need to establish for each branch of mathematics foundational truths to be universally agreed upon without formal demonstration or proof has never been questioned, despite the debate and disagreement that have characterized this process historically. For example, geometry, a branch of mathematics characterized by its logical reasoning and rigor, requires *a faithlike* acceptance of its axioms, postulates, and undefined terms. (MacKenzie, p.127)

Secondly, of historic and fundamental importance in both theology and man's quest for mathematical truth are the distinct yet complementary roles played by rationalism and empiricism. Christian rationalists such as Augustine believed that God implants ideas and the ability to reason in the human mind, through the mediation of Jesus Christ, the *eternal wisdom of God*. (Nash, pp.66-81) Alternatively, theistic empiricists such as John Locke believed that all human knowledge is acquired through sense experience, that human beings are born without innate ideas and that learning is by experience only. (Nash, p.76) In mathematics this distinction traces its roots at least as far back as the ancient Greek philosophers Plato and Aristotle. Plato's rationalism was characterized by *a priori* or deductive reasoning, and the existence of *absolutes* and *forms*. (Kuyk, pp.72-3) An early proponent of mathematics because of its abstraction and appeal to the mind, Plato insisted that "no one ignorant of mathematics" should enter

his academy. (Wilson) By contrast, Aristotle's empiricism emphasized *a posteriori* or inductive reasoning, and that knowledge of an object is found exclusively in the object itself. (Internet Encyclopedia of Philosophy) Mathematics, then, is not abstract but concrete, since "mathematics deals with sensible things". (Kuyk, pp.75-76)

Though viewed as conflicting and mutually exclusive by many, rationalism and empiricism, if appropriately qualified, are complementary in nature, whether in theology or mathematical philosophy. Poincare believed in both an empirical representational space, apprehended via the senses, and an idealized mathematical space of abstraction, with reasoning as the channel through which one proceeds from the former to the latter. (Kuyk, p.113) Likewise Augustine, while insisting upon man's divinely-inspired innate ideas, acknowledged the senses to be an additional source of human knowledge: "Far be it from us to doubt the truth of what we have learned by the bodily senses." (Nash, p.72)

As a final illustration of the link between theological and mathematical inquiry, consider the influence each has exerted upon the other since antiquity. Granville Henry gives a number of ways that Christian theology has been affected by classical mathematics. (Henry, p.13) The unchangeable nature of mathematics and its concept of unity helped to shape man's understanding of God's immutability and indivisibility and the eternal nature of the soul.[14] Also Christianity's historic faith/reasoning dichotomy is grounded (at least partially) in the view of man's rational nature held by the ancient Greek mathematicians. Similarly the Christian understanding of the term *Logos* as applied to Christ (John 1:1), rests upon a Greek comprehension of that word. (Henry, pp.84-90)

Conversely, many of history's greatest mathematicians readily acknowledged that their beliefs about God shaped the course of their mathematical endeavors. The following quotes demonstrate this point, and that God is indeed glorified in the vocation of a mathematician:

> "Every man has been made by God to acquire knowledge and contemplate." (Pythagoras, from *Scientists and God*)
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> "The laws of nature are but the mathematical thoughts of God." (Euclid, from *Scientists and God*)
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> "I do not feel obliged to believe that the same God who has endowed us with sense, reason, and intellect has intended us to forgo their use." (Galileo, from *Scientists and God*)
>
> "God does arithmetic." (Gauss, from *Scientists and God*)
>
> "You have ordered everything in measure and number and weight." (Wisdom, 11:20b)
>
> "God is the monarch of the most perfect republic, composed of all minds, and the happiness of this city of God is His principle purpose." (Murray)
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> "By God's grace, we need hearts enlightened by the Lord Jesus Christ to understand reality." (Physicist John Polkinghorne, from *Scientists and God*)

Mathematics and the Nature of God

Various distinctives of mathematics (imperfectly) reflect God's attributes. As God displays absolute *truth* in His being (Ex. 34:6) and in His works (Ps. 33:4), so mathematics exhibits objective *truth* in its essence and in its study. As God is the unique source of all truth (John 16:13), He alone so endows mathematics. Also God is characterized by *consistency* and *orderliness* in His being and in his works (1 Cor. 14:33: *For God is not the author of disorder but of peace*), standards to which all good mathematics must adhere. According to Sir Isaac Newton, "It is the perfection of God's works that they are all done with the greatest simplicity. He is the God of order and not of confusion." (Chrisitianson, p.261) In addition, the mathematician's emphasis upon *precision* and *careful attention to detail* models the same priority of the Creator: *For assuredly, I say to you, till heaven and earth pass away, one jot or one tittle will by no means pass from the law till all is fulfilled* (Matt: 5:18). *But the very hairs of your head are all numbered* (Matt. 10:30).

The mathematical concept of *infinity* describes that which is unbounded in time or space, mirroring the analogous attributes of God, so majestically proclaimed by the Psalter: Before *the mountains were brought forth, or ever You had formed the earth and the world, even from everlasting to everlasting, You are God.* (Ps. 90:2) *Where can I go from your Spirit? Or where can I flee from Your presence?* (Ps. 139:7) The Westminster Shorter Catechism

(Q4) expresses it like this: *God is a Spirit, infinite, eternal, and unchangeable in His being, wisdom, power, holiness, justice, goodness, and truth*.

Both God and the ultimate scope of mathematics are *unfathomable*. Though gifted and industrious individuals have discovered many and varied mathematical truths throughout the millennia, the limitations of human reason in such pursuits have been glaringly evident. Fermat's Last Theorem baffled mathematicians for 350 years; the status of Euclid's Parallel Postulate, for nearly two millennia. And how little is known now in comparison to what remains to be known! The truth about the Goldbach and Twin Prime Conjectures has eluded mathematicians for centuries, and will, perhaps, for centuries to come. As a complete understanding of mathematics is beyond the intellectual grasp of man, so is God in His transcendence: *Oh, the depth of the riches both of the wisdom and knowledge of God! How unsearchable are His judgments and His ways past finding out!* (Rom. 11:33).

Existence and *uniqueness*, so critical to many mathematical problems, characterize the Lord of the universe as well: *Hear, O Israel: The LORD our God, the LORD is one!* (Deut. 6:4). *But without faith it is impossible to please Him, for he who comes to God must believe that He is…* (Heb. 11:6). Also the *plurality* of mathematics as manifested by its many branches comprising the whole, provides a glimpse of the *plurality* of the *Trinity* (Matt. 28:19). And since the godhead in its plurality predates history (Gen. 1:26), so does mathematics! Finally the *changelessness* over time of key mathematical concepts reflects this same attribute of our God: *For I am the LORD, I do not change…* (Mal. 3:6).

Mathematical Concepts in Scripture

An abundance of mathematical concepts may easily be gleaned from the pages of Scripture. The mathematician clearly discerns *abstraction* and *generalization* (1 Cor. 15:22: *For as in Adam all die, even so in Christ all shall be made alive.*); a round approximation for *Pi* (1 Kin. 7:23: *And he made the Sea of cast bronze, ten cubits from one brim to the other; it was completely round. … a line of thirty cubits measured its circumference.*); the concept of *limit*--perfection is to be approached over time by the believer--Phil. 3:12-14: *Not that I have already attained, or am already perfected; but I press on… reaching forward to those things which are ahead, I press toward the goal for the prize of the upward call of God in Christ* Jesus); and the *optimum* virtue (1 Cor. 13:13: *And now abide faith, hope, love, these three: but the greatest of these is love*). And as an enthusiast of symbol use, the mathematician delights in the biblical symbolic use of numbers such as 7 (perfection or completeness), 10 (order or kingly authority), 12 (the people of God), and 40 (a long time and ushering in a new age). (New Geneva Study Bible, pp. 20, 121, 2008, 2017)

Several ideas flowing from the pages of Scripture that are not intrinsically mathematical may, however, be viewed through a mathematical lens. In identifying Himself to Moses, God reveals His personal name *Yahweh* (Ex. 3:14, 15), derived from the Hebrew verb meaning *to be* and disclosing His self-existence, that He is "not defined or determined by any other than Himself". (New Geneva Study Bible, pp. 97) Thus God in His essential existence corresponds to the notion of *undefined terms* in mathematical structures. His *axioms and postulates* include basic statements concerning His character (e. g., holiness, Lev. 19:2), His expectations of man (the Ten Commandments, Ex. 20), and man's failure (Rom. 3:23) and subsequent hopelessness (Rom. 6:23a), truths to be accepted by all without condition or qualification. His *theorems and propositions* are principles that may be deduced from the above assumptions, e.g., man's desperate need of a Savior (Eph. 2:12) or Jesus' exposition of the true demands of the Law (Matt. 5:21-48). The rational arguments proffered to make these and other such deductions serve as *proofs*. For instance, Paul *proves* to the Romans that justification is by grace through faith in Christ (Rom. 3:21-4:25). Such apologetics, so critical in Paul's ministry of the Word, characterized Peter's teaching as well (1 Pet. 3:15). And as mathematical theory needs to be applied, many of the Epistles were penned by the Apostles as *applications* of the aforementioned results (e.g., James' exhortations to demonstrate one's faith by his/her works; James 2:14-26).

Logical Reasoning in Scripture

Ultimately biblical arguments are predicated upon *faith*, the means by which God brings salvation to His people (Eph. 2:8, 9) and vital to their discernment of spiritual truth (1 Cor. 2:13-14). Nevertheless, as hinted at in the previous paragraph, such arguments follow the same rules of logic that are indispensable to mathematical proof. From Esther's courageous tautology *If I perish, I perish!* (Esth. 4:16) to the Apostle Paul's *reductio ad absurdum* of 1 Cor. 15:12-20 (demonstrating the fallacy of believing there is no resurrection of the dead), the logician's craft is skillfully employed.

Countless occurrences of the conditional argument *modus ponens* (implication) are to be found in Scripture, some promising abundant blessing (e.g., 2 Chr. 7:14: *If My people who are called by My name will humble themselves, and pray and seek My face, and turn from their wicked ways, then I will hear from heaven, and will forgive their sin and heal their land.*) and others giving solemn warning (e.g., Matt. 18:6: *Whoever causes one of these little ones who believe in Me to sin, it would be better for him if a millstone were hung around his neck, and he were drowned in the depth of the sea*.) The implication addressed in Romans 6 (*If we continue in sin, then grace will abound*) is deftly shown by the Apostle Paul to be fallacious. Note the use of quantifiers in the implications of Rom. 3:23 (*For all have sinned and fall short of the glory of God) and* Deut. 15:7 (*If there is among you a poor man of your brethren… you shall not harden your heart nor shut your hand from your poor brother*).

The Bible makes it markedly clear that some pairs of propositions are logically equivalent (e.g. Matt. 6:14: *For if you forgive men their trespasses, your heavenly Father will also forgive you. But if you do not forgive men their trespasses, neither will your Father forgive your trespasses*), whereas with other pairs the implication is true in only one direction (e.g., Works must necessarily follow but are not sufficient unto salvation; Eph. 2:8-10; Titus 3:4-8). And with flawless logic the Apostle James decisively asserts the truth of both an implication and its contrapositive (*faith implies works, and no works implies no faith*; James 2:17, 18).

Implications for Christians in Mathematics

What then can be said of the Christian mathematician? Do these math-and-Bible *connections* serve as an artificial link between inherently diverse worlds? Do they justify the believer's engagement in an otherwise secular pursuit, enabling him to salvage some level of self-respect when he compares himself to others called to *full-time* Christian service? Perish the thought! The aforementioned *connections* by their very nature demonstrate that no such justification, nor reconciling of the irreconcilable, nor quest for self-respect, is required. All knowledge (including mathematics!) originates in the mind of God; all subjects are founded upon and permeated by His truth; endeavors in all fields of study, if undertaken for the praise and honor of our Lord, constitute sacred duty rather than secular obligation, in short, *full-time* Christian service. As John McIntyre declares in his article *Calls of Ivy*, "evangelical Christians must rediscover the Reformation truth that God can be glorified through a life of scholarship" (MacIntyre, pp.31-34)—even in mathematics!

The believer's motivation, then, for the study of mathematics is love for God and the desire to serve Him, and such effort must be characterized by diligence and the pursuit of excellence (Phil. 1:9-11; Col. 3:23, 24). Nevertheless we must always remember that mathematical *enlightenment* is a gift from God and not a product of our own imaginations (John 15:5, Phil. 4:13, James 1:5). As Sir Isaac Newton once observed "All my discoveries have been made in answer to prayer." (Lamont, p.47)

I hope this paper reminds the reader of the marvelous relationship between mathematical and biblical truth, and encourages him/her to serve the Lord through the medium of mathematics with renewed vitality and devotion.

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