

What we can Learn from Process Theology: Integrating Faith and Mathematics

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1. Introduction

In the inaugural issue of *The Journal of the Association of Christians in the Mathematical Sciences*, James Bradley, the founding editor, suggests fourteen areas that need to be addressed by Christian mathematicians who are serious about integrating their faith and their work. One of those areas is the topic of this paper. Bradley frames the question: “Some thinkers (perhaps influenced by process theology) have asserted the idea that God’s creation is not a finished work but that he creates new mathematical objects through mathematicians. Is this idea theologically sound? Is it helpful for our understanding of mathematics?”¹⁰ I copy Bradley’s exact phrasing because I believe he poses the questions in the appropriate order: first determining the theological validity of the process movement and then secondarily examining its influence on an understanding of mathematics.

There are numerous examples of great thinkers attempting to harmonize mathematical advances with the canons of the historical Christian faith in an attempt to make Christianity relevant to modern, intellectual society. Process theology arose because its adherents believed it to be the best of such attempts. Upon close inspection, however, process theology can only be labeled as a departure from Christian Orthodoxy. Yet the process perspective still has something to offer for the construction of a framework within which a distinctly Christian perspective of mathematics might be developed. As contemporary Christian mathematicians wrestle with integrating their faith and their discipline, it is the contention of this paper that they will benefit greatly from studying process theology and, in particular, from critically examining the ways in which it departs from orthodoxy.

In the first section of this paper I will summarize the tenets of process theology and examine the deep interplay between this school of thought and developments in the field of mathematics. A brief introduction to Open theism and its relationship to process thought will be presented. By comparison, Open theism finds a much more prevalent place in contemporary scholarship and a greater number of adherents than process theology. In this sense it might seem a more relevant focal point for discussion in developing a philosophy of mathematics, however there

¹⁰James Bradley, “Letter from the Founding Editor,” *Journal of the ACMS*, <http://www.acmsonline.org/journal/letterfromeditor.htm> (accessed April 4, 2010).

is no explicit connection between Open theism and the practice of mathematics.¹¹ Process theology on the other hand will be presented as a clear historical example of how theological foundations have significant impact on the practice of mathematics. It is my argument that any Christian mathematician who wishes to devote themselves to the serious integration of their faith in their work finds themselves in much the same position as the founder of process theology (and perhaps subject to similar temptations). In the next section, I will critique the tenets of process theology in light of scripture and the historical teaching of the Christian church. This critique will focus specifically on the doctrines of divine revelation, God as Trinity, and the person and work of Jesus Christ. From this analysis the paper will conclude that process theology radically departs from Christian orthodoxy and therefore its proposal for integrating orthodox Christian faith and mathematics cannot be accepted.

There are two specific ways in which the process attempt fails. Its first fault lies in the presuppositions that are brought to the task of integrating mathematics with Christian faith. And second, even if the process assumptions are granted, flaws remain in the implementation of those beliefs in both theological reflection and mathematical practice. The paper will close with several suggestions of how Christian mathematicians might refine the integration of their faith and their discipline in these areas where the process offering fails.

2. A Brief Overview of Process Thought and Theology

Process philosophy and theology, like all schools of thought, is not expressed uniformly by all of its adherents. While there do appear to be some core beliefs that are inherent in the label of “process,” there are also many different variations and unique expressions of process thought present in the work of different “process” thinkers. This paper will focus on the doctrines of process faith as described in the work of Alfred North Whitehead and his contemporary disciples. The reasons for this are threefold. First, Whitehead is largely credited with the coining of the term “process philosophy” from his book *Process and Reality*.¹² Second, before he tackled more philosophical issues, Whitehead’s primary claim to fame was his work in the field of mathematics, most notably his collaboration with Bertrand Russell on the *Principia Mathematica*. Third, as a nominal and nonconformist Christian, Whitehead also suggests some religious consequences of process thinking.¹³ Let us briefly examine the tenets of process thought first as they are expressed in a general philosophical worldview and second, as they are applied to the doctrines of Christian theology.

¹¹Perhaps one exception may be David J. Bartholomew, *God, Chance and Purpose*, (New York: Cambridge University Press, 2008). The thesis of this book is that chance is neither unreal (because of the sovereign plans of a Designer) nor non-existent (because of a deterministic God) but an integral part of God’s creation. This view, written by an Open theist, is expounded, illustrated and defended by drawing on the resources of probability theory and numerous examples from the natural and social worlds.

¹² John B. Cobb, Jr., “Process Theology,” Process and Faith Resources, <http://www.processandfaith.org/resources/Cobb%20on%20Process%20Theology.shtml> (accessed April 10, 2010).

¹³Andre Gounelle, “Process Theology,” In *Encyclopedia of Christian Theology*, Volume 3, ed. Jean-Yves Lacoste (New York: Routledge, 2005), 1288.

3. Process Philosophy and General Theology

Though process philosophy rose to prominence during the middle of the twentieth century, its roots can be traced as far back as the ancient Greek philosopher Heraclitus.¹⁴ Heraclitus suggested that the fundamental thing out of which everything is made is change. That is, everything is constantly in flux. Several of the key terms used in the philosophy of Heraclitus are found in contemporary process philosophy. Heraclitus famously made the observation that you cannot step in the same river twice. The reason is that the river is constantly changing, it is constantly *becoming*. The problem with this view is that it seems to go against our life experiences: there appears constancy. Heraclitus claimed that *Logos* (word, reason, language) is the principle of stability which gives the *appearance* of permanence. This concept of *becoming* forms the foundation for process philosophy. And as we will examine later, the stability of *Logos* plays an important role in the theological applications of process of thought.

In process philosophy, reality is characterized by becoming rather than metaphysics based on substance and essence.¹⁵ The basic building blocks of reality are understood as *events* of extremely brief duration which reach fruition, or “a peak of satisfaction,” and then perish, to be succeeded by other entities.¹⁶ Reality is constantly developing and changing. Stability, inertia, and fixity are illusions—the world and every being in it constitute a flux, a continuous movement that changes ceaselessly.¹⁷ Events are given primacy over substance, and therefore how we define who we are and the world in which we live is necessarily stated in terms of the affects of the culminated events. Every being is born of an interconnection of encounters and relationships, a network of conjunctions that give rise to persons and objects.¹⁸ Cobb summarizes this philosophy in the outworking of Whitehead’s thought:

Whitehead is a radical empiricist who understands human experience as a unity of largely unconscious feelings of the body and its environment. Out of this unconscious physical experience, sensation and thought arise. Emotions, purposes, values, memories, and anticipations are more fundamental than sense experience and thought. . . . Each occasion of experience is an instance of the many becoming one and being increased by one. Whitehead cannot understand this process apart from something like unconscious purpose, an aim to be and to be as much as is possible under the circumstances. . . . Whitehead sees the ground or source of purpose, value, order, and novelty—and in human beings of moral and religious feeling—as divine. He calls it God.¹⁹

When the concept of God is introduced into this mode of thinking the theological ramifications of process thought begin to become a little clearer. Process theology describes itself as ultimately an effort to make sense of the basic Christian understanding that God is love.²⁰ Because of its convictions, in process thought divine love must mean being affected and changed

¹⁴Ronald H. Nash, “Introduction,” In *Process Theology*, ed. Ronald H. Nash (Grand Rapids, MI: Baker Book House, 1987), ix.

¹⁵Paul S. Fides, “Process Theology,” In *The Blackwell Encyclopedia of Modern Christian Thought*, ed. Alister E. McGrath (Oxford: Blackwell Publishers, 1993), 472.

¹⁶*Ibid.*, 472-73.

¹⁷Gounelle, 1288.

¹⁸*Ibid.*

¹⁹Cobb, “Process Theology.”

²⁰Robert C. Mesle, *Process Theology, a Basic Introduction*, (St. Louis, MO: Chalice Press, 1993), 1.

by those who are loved.²¹ Process theology conceives the world to be a social organism, an interdependent and interrelated whole, growing towards its satisfaction through a network of mutual influences, among which are the persuasive aims of God; in this process, God is affected by the world as well as affecting it.²² A key tenet of process theology is that God's action in the world is persuasive and never coercive. Causation is a matter of influence.²³ God is viewed as the one keeping the rules of the process (the organizing principle of growth itself).²⁴ In the philosophy of Whitehead, God envisages all the possibilities there are for the world. These he sorts into values, graded by their relevance to any particular situation and from them he presents each actual entity with an initial aim as it sets forth on its path of growth towards its satisfaction.²⁵ However, the entity is free to accept, modify, or reject this divine influence. Through his interaction with the world, God is said to be affected and somehow caused by it. As Whitehead describes it, God absorbs the effects of worldly action and decision into himself, making him the "fellow sufferer who understands."²⁶ God persuades by his aims, understood by Whitehead to be the specific possibilities that will make for maximum satisfaction and beauty. And by his sufferings God offers himself to be prehended (another Whiteheadian term that can be best understood by the phrase "laid hold of" or "grasped") by the world.²⁷ All entities are influenced as they feel the effects of their decisions and actions upon God and as they feel his evaluation and harmonizing of these effects within the creative synthesis of his nature.²⁸

Process theology concentrates on the nature of God's activity, redefining omnipotence in terms of persuasion. God carries on an action in the world through his capacity to persuade beings to listen to him and respond to his promptings—it is not possible for him to obligate them and he depends in part on their response and reaction.²⁹ Process theology redefines omniscience as God's perfect knowledge of both possibility and actuality without equating the two.³⁰ In other words, God knows all things that are actual at present and all things that are possible in the future, but he does not know which possibilities will become actuality.

4. Process Theology and Traditional Christian Doctrines

We have explained the basis for understanding God in process theology in only a broad theistic sense. Now we will examine the tenets of process theology as they attempt to interpret doctrines specific to Christianity through the relation-based worldview generated by Whitehead. From this point forward, the term "process theology" will be used to denote the specific applications of process thought to the *Christian* understanding of God. This paper will focus on the impact of process theology on three main doctrines which I believe are crucial to the Christian faith: the doctrine of Scripture as divine revelation, the doctrine of God as Trinity, and the doctrine of the person and work of Christ. It is important to recognize that a modification of any one of these doctrines influences our understanding of the other two. However, for the sake of

²¹Charles Hartshorne, *A Natural Theology for Our Time*, (La Salle, IL: Open Court, 1967), 75.

²²Fides, 472.

²³Ibid., 473.

²⁴Ibid.

²⁵Ibid.

²⁶North Whitehead, *Process and Reality*, (New York: The Macmillan Company, 1929), 532.

²⁷Fides, 474.

²⁸Ibid.

²⁹Gounelle, 1288.

³⁰Fides, 474.

organization, each doctrine will be treated as independently as possible.

4.1. The Doctrine of Scripture as Revelation

Process theologians accord an important place to Scripture. However, just as the omnipotence of God is defined in terms of persuasion, the authority of Scripture is viewed as dialogical and persuasive rather than unilateral and coercive. That is, while affirming the Bible's role in fostering a genuine encounter with God and a meaningful struggle to discern God's will, they reject the notion that the Bible speaks directly and simplistically for God.³¹ In process theology revelation takes place in concrete (non-supernatural) events and involves both divine activity as well as human reception. Revelation involves God's self-disclosure, but it is *not* the direction communication of propositional truth.³²

As a radical empiricist, Whitehead believed that all knowledge is at its base participatory.³³ Applying this epistemology to Scripture yields the following result: if perception is participatory and valuational, the language that emerges from it will necessarily be incomplete and fragmentary.³⁴ Language then is limited and ambiguous in its description of God. Thus process thought accepts the notion that God is in some sense revealed through scripture, but it also insists on interpretation in which readers are given considerable freedom in the shaping of meaning.³⁵ The interpretive process must give weight to the life and world of the contemporary interpreters and communities of faith. By viewing the world as a process, an emphasis must be placed on the continual transformation of historical traditions. As Whitehead states:

The inspiration of religion lies in the history of religion. By this I mean that it is to be found in the primary expressions of the intuitions of the finest types of religious lives. The sources of religious belief are always growing, though some supreme expressions may lie in the past. Records of these sources are not formulae. They elicit in us an intuitive response which pierces beyond dogma.³⁶

So then, for process theology, no one belief is absolutely necessary for Christians to hold. Christianity is (as everything else) a process, a socio-historical movement. Such a movement certainly requires beliefs about its origins, about its nature and mission, and about the world, but these beliefs change and develop from generation to generation. Process theologians then charge themselves with the task of helping to shape these beliefs in faithfulness to the movement's history *and* its new situation.³⁷

³¹Russell Pregeant, "Scripture and Revelation," In *Handbook of Process Theology*, ed. Jay McDaniel and Donna Bowman (St. Louis, MO: Chalice Press, 2006), 67.

³²Ibid., 70.

³³Ibid., 71.

³⁴Ibid.

³⁵Ibid., 72.

³⁶Alfred North Whitehead, *Religion in the Making*, (New York: Fordham University Press, 1996), 144.

³⁷John B. Cobb, Jr., "Jesus and Christ in Process Perspective," In *Handbook of Process Theology*, ed. Jay McDaniel and Donna Bowman (St. Louis: Chalice Press, 2006), 28.

4.2. The Doctrine of God as Trinity

The doctrine of Trinity has historically been defined as God existing as one essence in three persons. Whitehead's identification of "person" with "substance" led him to conclude that the Christian doctrine of trinity was really a crude tri-theism. Therefore the term "person," in process theology, was viewed in the abstract, as a mode of activity of a single concrete subject. This means that process theology really upholds a tri-unity of abstract and impersonal principles.³⁸ The subjectivity of Jesus cannot be identified with the second member of the Trinity and likewise, the subjectivity of the Holy Spirit cannot be identified with the third member of the Trinity.³⁹ These parts of the Trinity are viewed as abstract and impersonal principles within God's nature. While they may interact with the world through God's consequent nature, the process construction of Trinity is decidedly inferior to a dynamic society of three conscious, active, and loving persons.

So while there is no explicit attempt to develop a doctrine of Trinity in process theology, attempts have been made to interpret a process concept of God in terms of the triune symbol. The tradition of Whitehead has argued for a divine society of "primordial, consequent, and subjective natures."⁴⁰ As Fides states:

The relational and social view of reality, its interpretation of substance in terms of event, and the way that subjects are constituted by their 'presence' in each other seem to make process thought and an apt partner for Trinitarian theology. However, while process thought certainly presents a unity and plurality within God's relationship to the world, it is difficult to find anything like inner mutual relationships between the different dimensions of God's own being.⁴¹

4.3. The Doctrine of the Person and Work of Christ

For process theology, God's being present or immanent in Jesus is a matter of historical fact, since God is believed to be immanent in *every* event whatsoever (a view we might refer to as panentheism).⁴² The question then arises: how do process theologians see Jesus as a unique individual? To understand the uniqueness of Jesus in process theology we must first understand the picture of the spiritual life in process theology. People are said to embody the nature of God moment by moment, each to different extents. If in one moment they resist the possibilities that come to them, this is seen as hardening their hearts toward God, causing the possibilities in the next moment to be more limited. If on the other hand, moment by moment they respond to the fullest possibility God offers, new possibilities become open to them and they become more and more free—a person's positive response to God's call becomes increasingly spontaneous.⁴³ Jesus is unique in that he exhibits the *optimal response* to God's calling. He was given a unique mission and he responded with great faithfulness.

So then, what does it mean to say that Jesus was God incarnate? Process theologians respond by saying that the consequent, or interactive, aspect of God's nature was incarnate in Jesus.

³⁸Bruce Demarest, "The Process Reduction of Jesus and the Trinity," In *Process Theology*, ed. Ronald H. Nash (Grand Rapids: Baker Book House, 1987), 82.

³⁹Ibid.

⁴⁰Fides, 474.

⁴¹Ibid.

⁴²Cobb, "Jesus and Christ in Process Perspective," 29.

⁴³Ibid., 31.

God's consequent nature is the way in which he both feels and is felt by the world.⁴⁴ As mentioned, in Greek thought, the *Logos* was the principle of reason embodied both in the human mind and in the order of the cosmos. Any process Christology must underline the free human response of Christ to the divine purpose (or *Logos*) as a way of understanding the nature of incarnation.⁴⁵ Process theologians have noted a remarkable affinity between a plausible account of how the "primordial" (or fixed, as opposed to the consequent or interactive aspect) nature of God functions in the world and what is said of the *Logos* at the beginning of John.⁴⁶ The divine that was present in Jesus is seen as also being present in all of us in the whole of creation. To process theologians it is quite natural to consider what Whitehead names as the primordial nature of God the same as what John refers to as the *Logos* (John 1:1, 14).⁴⁷ Process theology proposes that Jesus is an incarnation of God in many important ways, but also that God is like Jesus in equally important ways. God is the great companion, a fellow sufferer who understands, absorbing the world's sins and sufferings and who guides the world, not by violence or blind decree, but rather by love.⁴⁸ All of this is revealed in Jesus.

Another term that is important to define is title of "Christ." Process theology uses this term not to mean "Messiah," or "Anointed One," but rather "Divine Reality Incarnate." "Christ" is not a label unique to Jesus of Nazareth; it can be applied to any person or instance in which "creative transformation" occurs. A "creative transformation" is defined as a move to appreciate and appropriate the spiritual attainments of other religious leaders and communities (of all faiths). Christ is considered God's power of creative transformation. Because Jesus brought about and continues to bring about changes and because he mobilizes us for God's plan, he is the supreme Christ, but other people endowed with analogous powers and other Christ-like actions manifest themselves in the world, in several different religions.⁴⁹ A faith in Jesus that prompts such occurrences is seen as a transformative faith, and in such movements process theologians see Christ (that is God) at work in the world.⁵⁰

A final point needs to be mentioned on the process understanding of evil. I group this under the doctrine of Christ because in traditional Christian theology, an understanding of human sin and spiritual lostness is vital for appreciating the salvation that is found through Christ and his work on the cross. Process theology denies the traditional doctrine of original sin—that due to the failure of Adam and Eve, the first humans, all of humanity has inherited a corrupt and sinful nature. Process theology cannot follow this view because process adherents believe that all humans are part of a great evolutionary process, and that God creates in and through this process.⁵¹ The natural evils that result in the world are not seen as the rebellion of the created order resulting from the rebellion of the first humanity, but rather as simply necessary violence that is inherent within any evolutionary system. The moral aspect of sin is described as the refusal of love from and to God and from and to neighbor and even from and to oneself.⁵² Because process thought views the world as an interdependent whole, one must talk

⁴⁴Ibid., 35.

⁴⁵Fides, 474.

⁴⁶, "Jesus and Christ in Process Perspective," 30.

⁴⁷Ibid.

⁴⁸Ibid., 36.

⁴⁹Gouelle, 1288.

⁵⁰Cobb, "Jesus and Christ in Process Perspective," 33.

⁵¹Marjorie Hewitt Suchoki, "What is Process Theology?," Process and Faith, <http://www.processandfaith.org/publications/RedBook/What%20Is%20Process%20Theology.pdf> (accessed April 10, 2010).

⁵²Ibid.

about communal as well as individual sin. Process adherents believe that God is always calling humanity toward the good, and when we fail to heed God's call, we fail to contribute as best we can to the commonwealth of all. This failure is sin and it has ill effects that spiral beyond its origins in the interdependent world, *including God himself* who is in the world relating to it.⁵³

The crucifixion of Jesus in process theology is then *not* about a substitutionary atonement for sin. To the extent that process theologians view unnecessary violence as sin, violence cannot be that which saves us from sin.⁵⁴ Process theologians prefer to believe that Jesus reveals who God is to us and for us. The cross does not represent vicarious sacrifice, but the revelation that God is with us even in our deepest pain.⁵⁵ Jesus reveals that the sins of all humans affect God. At the crucifixion Jesus died *because* of sin, which is different than saying that Jesus died *for* sin.

5. A Word on Open Theism

At this point it may be instructive to discuss briefly the relationship between process theology and Open theism. Open theists deny that the view of God they present is shaped by the principles of process philosophy. However, to the extent that process theology is used broadly to describe any theology that emphasizes an active, ongoing, and dynamic relationship between 'God' and creation, yet limits God in one way or another, the difference between process theology and open theism seems to be blurred. Technically, however, process philosophy as pioneered by Alfred North Whitehead, employs an empirical (naturalistic) methodology. From this perspective, process theology may be distinguished from open theism. Whereas process theology tends to deny the value and authority of scripture, Open theism's rallying cry is that they above all else derive their theology solely from the Bible. Open theists believe that traditional Christian beliefs were determined by an unnecessary influence of Greek philosophy, rather than a straightforward reading of the divine text. Open theists then view doctrines such as divine immutability as being inherently flawed (akin to process theologians) in the face of passages such as Gen. 6:5-7, 2 Kings 20:1-6, and Jonah 3, which describe God as changing his mind. The goal of Open theism is to remove these Greek philosophical biases from the Christian faith. However in reality, the choice between the traditional and open views of God hinges not upon *whether* one reads scripture in light of philosophical assumptions but rather upon *which* philosophical assumptions one employs in reading scripture.⁵⁶

6. Summary of Process Theology

Before moving on to the next section, I wish to briefly summarize the preceding one. Process thought emphasizes becoming over being, events over substance, and relationships over essence. God and the world are an evolving process. When this line of thought is applied to basic doctrines of the Christian faith, the result is an extreme departure from the historical teaching of the church. The Bible is no longer seen as truth and authoritative, it is rather a historical religious account that we can learn from. God is no longer presented as Trinity; at best he

⁵³Ibid.

⁵⁴Ibid.

⁵⁵Ibid.

⁵⁶Doug Blount, "TOGAS, TULIPS, and the Philosophy of Openness," *Southwestern Journal of Theology* 47, no. 2 (Spring 2005): 177-189.

is presented as duality: having a nature which effects change and a nature which experiences change. This God is no longer immutable, impassable, omnipotent, or omniscient. Christ is no longer fully God and fully man, but rather a man who demonstrated ideally what it is like to be in tune with the desires of God. His crucifixion and resurrection only have salvific effects in that they demonstrate how much God is with us in our sufferings and how he will always provide a way out. A fuller critique of these process modifications of Christian theology along with the repercussions of these conclusions will be offered below, prior to developing a proper Christian understanding of mathematics. Let us now examine the relationship of process theology to the field of mathematics in order to demonstrate that these questions of faith have serious implications for scholarly mathematical endeavor.

7. Process Theology and a Philosophy of Mathematics

As mentioned in the opening of this paper, Whitehead's initial claim to prominence came in the field of mathematics. The most notable of his achievements in this field was his work with Bertrand Russell on the *Principia Mathematica*. In this work Whitehead and Russell sought a unifying theory of mathematics based on logic and arithmetic—that is, they sought to secure all mathematical truths from a few assumptions of logic. Kurt Gödel's Incompleteness Theorem was a damaging blow to Whitehead and Russell's undertaking because it brought to light the limitations of both logic and arithmetic.⁵⁷ Gödel's theorem states that there is no set of consistent axioms, finite or infinite, from which all the true theorems of arithmetic can be derived. Gödel revealed that no rational system, or well-defined procedure, can ever present all truth, for then it would have to generate all the truths of arithmetic.⁵⁸ When translated to religion, this implies that there is no rational theology or philosophy by which we can understand the full truth about God or any other matter.⁵⁹

In order to overcome the problem of the lack of a single all-encompassing formal system and to preserve the close relationship of mathematics and *Logos*, as well as the idea that God establishes and guarantees the unity of *Logos*, process theologians look for solutions in terms of “plurality and increased potentiality.”⁶⁰ As stated by Henry: “It may be appropriate to understand the realm (however understood) of mathematical relationships and hence of potential relationships as evolving—a rather radical departure from modal western philosophy or at least from its Christian adaptation.”⁶¹

Any traditionally conceived understanding of God has as a consequence, by and large, a platonic understanding of mathematics (mathematical structures and relationships exist independently of man's construction of them and are there existing in some way or some form to be discovered)—if nothing else than because of the assumption that God knows and understands mathematical relations, thereby giving them some kind of existence independent of

⁵⁷Teun Koetsier and Luc Bergmans, “Introduction,” In *Mathematics and the Divine: A Historical Study*, ed. Teun Koetsier and Luc Bergmans (Boston, MA: Elsevier, 2005), 36.

⁵⁸Granville C. Henry, Jr., *Christianity and the Images of Science*, (Macon, GA: Smyth and Helwys Publishing, Inc., 1998), 164.

⁵⁹Ibid., 165.

⁶⁰Koetsier and Bergmans, 36.

⁶¹Granville C. Henry, Jr., *LOGOS: Mathematics and Christian Theology*, (Cranbury, NJ: Associated University Presses, Inc., 1976), 112.

man's creation.⁶² It has been proposed by process thinkers that this understanding of standard mathematics conditioned the doctrine of God's immutability. Therefore the interpretation of contemporary nonstandard mathematics (Gödel's theorem points out that the structures of knowing cannot all be formalized mathematically) relaxes any restrictions, at least from mathematics itself, of requiring God to be strictly immutable.⁶³ Process thinkers maintain that platonic mathematical structures do not change, existing in the primordial nature of God, as affirmed by Whitehead, but they relax the requirement that no new potentials or structures be added to the realm of these eternal objects.⁶⁴ This relaxation is based on the observation that it has been primarily the axiomatic method that has given mathematicians and philosophers the authority for stabilizing the mathematical realm—for claiming it to be complete as related logically to a few unquestionable assumptions. But the axiomatic method cannot adequately characterize the nature of mathematical structures that are presently known. As Henry states elsewhere:

The new developments in mathematics seem to me to allow a better understanding of what it might mean for God to have the freedom to change the totality of potentials—both in terms of the structure of knowing and among human consciousness and in terms of objects known. This would mean that not only could man's consciousness, as well as other structures of the world, evolve in ways hitherto unknown, and in ways impossible to know, but in ways that might be even a surprise to God—a surprise in the sense that the potential mathematical structure that could characterize (in part) such consciousness might not even *be* at present.⁶⁵

Process theology, as developed by Whitehead and others, is therefore at least partly to be understood as an attempt at taking into account the new insights that resulted from Gödel's publication.⁶⁶ In *Process and Reality*, Whitehead expresses not only his mathematical and scientific interests, but combines them religious, aesthetic and metaphysical ones to present a unified cosmology.⁶⁷ To the proponents of process theology it is the most important development in Christian thought since the first century. It is significant, they think, because the movement gives sophisticated moderns an intellectually and emotionally satisfying reinterpretation of Christianity that is compatible with late-twentieth century ways of thinking.⁶⁸ One major attraction of Whitehead's thought is that it seems to offer a way in which the disparate branches of modern learning can be reintegrated, such as the areas of science and religion (though as we will point out shortly, this may not be the best way to view these branches in the first place).⁶⁹ Whitehead's work was closely related to mathematical physics, and it offered an integration of the findings of the sciences with the evidence of religious experience that had come to seem almost impossible.⁷⁰ Process theology was (and still is) seen as a systematic philosophical perspective that can solve problems in science and theology and relate them in an integrated manner. As described by Henry:

⁶²Granville C. Henry, Jr., "Nonstandard Mathematics and a Doctrine of God," *Process Studies* 3, no. 1 (Spring 1973): 9.

⁶³Ibid., 14.

⁶⁴Ibid., 12.

⁶⁵Ibid., 11.

⁶⁶Koetsier and Bergmans, 36.

⁶⁷Cobb and Griffin, 163.

⁶⁸Nash, ix.

⁶⁹Cobb and Griffin, 173.

⁷⁰Cobb, "Process Theology."

The source of science is the real world that exists objectively on its own independently of our observation. We are part of this world and experience it. Science is understood in terms of its abstract, normally mathematical, structure which we create. Because this abstract structure is necessarily a partial description of the real world by virtue of the limitative theorems, theoretical science changes because of our refined experience in the world. We discover new things about the world that challenge old theory and precipitate new theory.

The source of religion is God, who exists objectively and independently of our observation. The religions of Judaism and Christianity claim that God reveals God's self to humans and that humans experience God. A deposit of this revelation and human experience is contained in the Bible, which does not have mathematical or theoretical structure. It has historical, narrative, and mythological nature. Like scientific theory, classical theology which is an attempt to describe God by abstract logical structure, is also created by human invention. Although it seeks loyalty to the biblical revelation, it is necessarily only a partial description of any divine reality because of the limitative theorems. Theology changes as religious experience becomes richer or different.⁷¹

The work of Gödel is key in understanding the development of Scripture and revelation in process thought. The revelation contained in the Bible is seen as being necessarily incomplete. If the Bible is a systematic structure and it is inerrant, then it cannot be general.⁷² In other words, if the Bible is viewed as the set of axioms, then there are true theorems that cannot be arrived at by way of those axioms. There are truths to which the Bible offers no insight. Rather than admitting this point, process theologians prefer to claim that the Bible is not a system but rather a window to the primary events of God's causal and historical encounter with humankind.⁷³ Once the doctrine of Scripture has been modified, it is not hard to see how the modified doctrines of God, Christ, Sin, and Salvation follow.

8. A Brief Critique of Process Theology

Many critiques have been leveled against process theology. Much of this work has focused on the process theologians' redefinition of divine omniscience. This approach would seem in keeping with the question that was posed at the beginning of this paper and much of the material presented so far. The question, "Do mathematicians create new mathematical objects that are surprising to God?" seems to be rooted in the discussion of God's knowledge. Extensive work has been done in the area of divine foreknowledge and responses to the tension that exists between God's omniscience, omnipotence and human freedom have been given that keep orthodox Christians from necessarily making a move to process theology. One such option is to recognize God's existence outside of time, therefore to speak of his future knowledge is a very different thing than to speak of human future knowledge.⁷⁴

⁷¹Henry, *Images*, 216.

⁷²*Ibid.*, 166.

⁷³*Ibid.*

⁷⁴Jonathan L. Kvanvig, *The Possibility of an All-Knowing God*, (New York: St. Martins Press, 1986), 166. See also Doug Blount, "On the Incarnation of a Timeless God," in *God and Time: Essays on the Divine Nature*, eds. Gregory E. Ganssle and David M. Woodruff (New York: Oxford University Press, 2002).

It is my contention, however, that the conversation need not go that far for the purposes of this paper. In other words it is not simply the fact that viable, orthodox, philosophical arguments exist that keep us from accepting process theology and a process perspective of Christian mathematics. Rather it is because process theology greatly damages foundational Christian doctrines that it cannot be accepted. If we are to maintain an orthodox faith and practice the discipline of mathematics in a distinctly Christian way there are core tenets that must be maintained. Philosophical and mathematical results that develop from (or necessarily involve) the forfeiture of any of these tenets cannot be accepted. That is not to say that they cannot be discussed, so long as that discussion brings us back to the core beliefs that Scripture is authoritative, God is Trinity, and Jesus as the God-man was crucified and resurrected as atonement for our sins. To be clear that process theology simply does give us a viable option in these doctrines, the implications of process thought in each will now be briefly discussed.

8.1. Revelation and the Trinity

As mentioned above, process thought accepts the notion that God is revealed through scripture in some sense, but because of the evolving nature of any tradition, process theology allows for considerable freedom on the part of the interpreter. In process theology, reference to the historical Jesus or the apostolic tradition is only one way that a critical element can be brought to bear on the question of the authority of Scripture.⁷⁵ Rather than viewing the Bible through this traditionally orthodox lens, process theologians prefer to approach the Scripture from the viewpoint of scientific modernity.⁷⁶ This excludes a belief in miracles; supernatural intrusions by God into the natural order. This is discarded for a trust in the evidence of science that all events have a natural sequence of cause and effect in the evolutionary process. The process school comes to the theological task with a low view of scripture—modern study precludes accepting all that is written therein as true. If God does not supernaturally intrude from without the natural order, divine revelation is by definition excluded. With the elimination of divine revelation, process theology takes its stand as a natural theology shaped from human materials alone.⁷⁷ This runs contradictory to 2 Timothy 3:16: “All Scripture is God-breathed and is useful for teaching, rebuking, correcting and training in righteousness.” Once the authority of Scripture is discarded, the door is open to modify any other doctrine in a way we see fit. That a doctrine appears in the Bible or that it was faithfully upheld by the historic Christian church provides no basis for its acceptance by modern, empirically minded process thinkers.⁷⁸ Because of the process belief that entities are constituted by relatedness to other entities or persons, and thus their repudiation of a substantial ontology, the creedal formations of Nicaea and Chalcedon are no longer relevant.⁷⁹ These formulations were worked out within a world view that is alien to the modern mindset. This conclusion is unacceptable to historically orthodox Christians.

Once the Bible and the creeds have been discarded, the doctrine of God as Trinity is easily modified. In the historical Christian faith God exists as one essence in three persons. This can perhaps best be seen in Ephesians 1:3–14 where each person of the Godhead is individually

⁷⁵Pregeant, 72.

⁷⁶Bruce Demarest, “The Process Reduction of Jesus and the Trinity,” In *Process Theology*, ed. Ronald H. Nash (Grand Rapids: Baker Book House, 1987), 64.

⁷⁷Ibid.

⁷⁸Ibid., 65.

⁷⁹Ibid., 64–65.

described and praised, and at the same time the interrelatedness of the three is beautifully stated and the uniqueness of a single divinity is clear. The Christian doctrine of trinity, viewed as three related persons in one substantial unity, provides demonstration of the classical philosophical problems of the relation of the one to the many and of being to becoming.⁸⁰ It is unacceptable for Christians to dismantle the traditional view of Trinity in order to philosophically resolve these lingering tensions.

8.2. The Person and Work of Christ

Following from the process understanding of Trinity, we find a misguided approach to understanding the pre-existence of the second person of the Trinity, God the Son, Jesus Christ. Process theology regards the *Logos* as an impersonal principle—the totality of the divine aims. Since the Whiteheadian *Logos* is not a discrete person within the Godhead, it hardly can be reconciled with the historic Christian explication of the eternal pre-existence of the second person of the Trinity (Isa 9:6; John 1:1–2; Rev 21:6).⁸¹

The process understanding of the incarnation is also unacceptable. Process theology views the *Logos* being immanent as the Christ in the whole of creation. The incarnation connotes that the impersonal *Logos*, the power for creative transformation, was maximally immanent and operative in the man Jesus of Nazareth. This denies that the incarnation involves the eternal second person of the godhead entering space and time and becoming man for us and for our salvation (John 1:1, 14; 2 Cor 8:9; Phil 2:6–8; 1 Tim 3:16). The process model compromises the decisiveness and singularity of the incarnation by affirming that the *Logos* is immanent in all entities.⁸² The process claim that two natures cannot relate except by displacement prompts Whiteheadians to insist that the orthodox belief in Jesus’ deity necessarily vitiates his authentic humanity.⁸³ Orthodox Christians cannot accept such a heretical, docetic Christology. John makes the results of this view clear when he states: “For many deceivers have gone out into the world, people who do not confess Jesus as Christ coming in the flesh. This person is the deceiver and the antichrist!” (2 John 7). The full humanity of Christ must be maintained (Matt 13:55; John 1:14, 19:5; 1 Tim 2:5; Heb 2:14).

The process belief that Jesus was simply the supreme example of responding to God’s calling moves in the other direction and seems to deny his complete deity. At best the process view can be considered on par with the heresies of Adoptionism (the spirit of God came upon the human Jesus at some point in his life) and Arianism (the Son of God was the first created being). Jesus is both fully man and fully God (John 1:1, 18; 10:30–133; 20:28; Rom 1:3–4; 9:5; 1 Cor 15:45–49; Phil 2:6–8; Titus 2:13; Peter 1:1). Scripture accords Jesus the same attributes as deity. Jesus is omnipotent (Isa 9:6; Matt 28:18; John 10:18), omnipresent (Matt 18:20; Eph 1:23), omniscient (Matt 9:4; John 4:16–19; 16:30; 21:17), and eternal (Isa 9:6; John 1:1; 8:58; Col 1:17; Heb 1:10–12; Rev 1:8). Belief in the divinity of Christ is a prerequisite of salvation (Rom 10:9; 2 Peter 1:3). If Jesus is not God, then he does not have the power to fully reveal the Father, and he does not have the power to save sinners. Soteriology demands that he be both true god and true man in order to redeem (1 Tim 2:5). He must be man to represent us

⁸⁰Ibid.

⁸¹Ibid., 78.

⁸²Ibid.

⁸³Ibid., 79.

(Heb 4:15) and he must be God to save us (Heb 7:24–25).

Ultimately, we as Christians must confess the mystery of the hypostatic union (1 Tim 3:16). We as Christians are also called to do one thing that process theology does not allow for, and that is the worship of Jesus Christ (Matt 2:2, 11; 14:33; Phil 2:10–11; Heb 1:6). Whiteheadians commonly depreciate the unique character of Jesus' person and accomplishments by upholding a form of degree Christology: Jesus was a special man who may well be surpassed by another religious figure in the evolutionary future.⁸⁴ However, the Bible makes it clear that Christ is the consummation of all previous revelations in history (Heb 1:1–2) and is the final and unique agent of salvation (1 Cor 3:11; John 14:6).

As discussed above, Process theology has what we can label as a Pelagian rejection of human sinfulness and rebellion, both individual and social. Process theology sees the cross as the ultimate negative moment, diverging from the Biblical claim that in the cross there is victory (Col 2:14–15). Contrary to the self-salvation of process theology in which a person responds to the loving lures of God, Scripture shows that it is God's provision that saves. On the cross in Christ, God bore the just penalty for the world's sin, satisfied his justice, and thus made a way for reconciliation (Isa 53:4–12; John 3:15–17; Rom 3:21–26; 5:6–11; Heb 2:14–17). The process view does not adequately assess the profound depths of human perversity and therefore it follows that the full meaning of the cross and resurrection as events which deal with sin and death is not grasped.⁸⁵

Process theology summarily rejects the personal and bodily resurrection of Jesus and believers in favor of the thesis that resurrection connotes God "taking up into his own memory the experiences of our Lord and his followers."⁸⁶ However, the Biblical account clearly ties the Christian faith to the hope of the resurrection (Job 19:25; Isa 25:8; Matt 16:21; 20:19; 26:32; John 2:19; 11:25). Resurrection was the focus of the church's missionary preaching, teaching, and worship (Acts 2:24, 31–32; 3:15; 4:10; 5:30–32; Rom 1:4; 6:4; 8:34; 1 Cor 15:4, 20).⁸⁷ Denying the resurrection leads to denying the remission of sins (1 Cor 15:17), the possibility of attaining salvation (Rom 10:9; 1 Cor 15:19), and ending all hope (1 Cor 15:32).

9. Developing a Christian Philosophy of Mathematics

Process theology thus denies, as biblically and historically understood, Christ's eternal pre-existence, incarnation, virgin birth, sinlessness, deity, atoning death, resurrection, ascension, and second coming, as well as the Trinity of God.⁸⁸ Process theology then does simply fall into a certain heretical category in its doctrine of Scripture, God, or Christ, rather it samples from *many* heretical beliefs. The claims of process theology cannot be entertained by the faithful Christian community. The philosophical assumption of process thinking is that reason working on the data of lived experience is judged competent to lead the mind into all truth.⁸⁹ This by definition is the very root of sin (Gen 3:6; Rom 1:18–32) and Christians cannot proceed with

⁸⁴Ibid., 80.

⁸⁵Ibid., 81.

⁸⁶Ibid.

⁸⁷Ibid.

⁸⁸Ibid., 83.

⁸⁹Ibid., 84.

this underlying presupposition. Rather, we are called to submit to the authority of God and his revelation. It is because of this that I have attempted to give the preceding analysis with an emphasis on the voice of the Scriptures, even though process theologians might not accept biblical authority. The purpose here is not to argue process thinkers out of their position, but rather to demonstrate the approach we must take in analyzing any subject (even mathematics) if our presuppositions are to be labeled as “Christian.”

Faith and understanding are not one in the same, though they are often taught as if they are. Understanding is not where redemptive value lies. Preaching a true Christian gospel is scandalous to man. We are never predisposed to take God at his Word. It is our nature to be skeptical about his Word (again, Gen 3). Scholarship since the Enlightenment has searched for knowledge to satisfy reason and understanding. But faith calls us to receive and accept what God has said even if we don’t get it emotionally or intellectually. The Spirit of God can make the doctrine of the cross easy to understand—but not for natural man. It is a supernatural action—but process theology rejects this notion.

Process theology’s major attack on Scripture was shown to derive from the work of Gödel. If we accept this premise as Christian mathematicians, we need not draw the same conclusions as process thinkers. As Matsumoto writes:

In light of Gödel’s Incompleteness Theorem, one must accept the fact that there may be certain propositions that are undecidable. In systematic and biblical theology, the set of axioms is the biblical texts. If one accepts the infallibility of the Scripture, as most evangelical Christians hold, the original texts are the axioms, from which one is to draw theological and practical conclusions. However, we all know that the Bible addresses neither every practical issue that we face nor every theological issue we ponder. Hence, these things on which the Bible is silent should perhaps be considered undecidable propositions in this axiomatic system.⁹⁰

While process theologians may be correct in asserting that the Bible does not concern itself with all matters of truth, this does not mean that we can reject the truth that it does contain simply arguing that it is incomplete. A more appropriate response is Christian humility to the unknowable aspects of God. Even a process thinker and mathematician such as Henry allows for this point:

Our evidence historically, certainly in terms of what we know, is almost exclusively of a changing domain of mathematical structures, a domain that changes primarily by addition to itself. It may be claimed that this is simply the growth of knowledge of a fixed domain. . . but it may be the case that there is an actual ontological addition to mathematical structures.⁹¹

Notice that Matsumoto’s point hinges on the presupposition that the Bible is infallible. Henry’s point hinges on a presupposition that the field of mathematics is changing and evolving, rather than our finite minds are simply growing in knowledge knowing that it cannot be perfected. A Christian approach to mathematics necessarily involves distinctly Christian presuppositions. Scripture can, and should, be used in developing a Christian understanding of mathematics, so

⁹⁰Saburo Matsumoto, “Call for a Non-Euclidean, Post-Cantorian Theology,” *Journal of the ACMS* (2006): <http://www.acmsonline.org/journal/2006/Matsumoto.pdf> (accessed March 27, 2010).

⁹¹Henry, “Nonstandard Mathematics,” 11.

long as it is used appropriately. As Timothy states: “Every scripture is inspired by God and useful for teaching, for reproof, for correction, and for training in righteousness, that the person dedicated to God may be capable and equipped for every good work” (1 Timothy 3:16–17). If the work we undertake (be it philosophical, mathematical, or anything) is to be righteous and dedicated to God, it must conform to His revelation. If we do recognize the authority of biblical revelation and the historical teachings of the church, then it is easy to reject the other process views of theology, Christology, hamartiology, and soteriology, as an orthodox understanding of these doctrines can be validly derived from the Scriptures.

It is clear that while many process beliefs arose out of a sincere wrestling with elements of the Christian faith, the results of this wrestling fall beyond the bounds of Christian orthodoxy. As Christians, it is important that in developing a philosophy of mathematics we maintain the convictions of our faith. The ideas put forward by process thinkers such as the human creation of eternal mathematical objects, must be examined through Christian lenses. These lenses see the Bible as inerrant and authoritative, God as Trinity, Jesus Christ as fully God and fully man, humanity as sinful and in need of redemption, and salvation as coming by grace through faith in Jesus.

While the mathematical concepts put forward by process thinkers may be intriguing, ultimately we cannot accept them because of the assumptions process thinkers use to make their conclusions. Even though a philosophical result is put forward that appears useful and eases tensions in a field of study, this does not warrant our overlooking the flawed methodology and thinking which led to the result. As Christians pursuing mathematical inquiry, we must always proceed with distinctly Christian presuppositions. As Plantinga charges:

We must work at the various areas of science and scholarship in a way that is appropriate from a Christian or more broadly theistic point of view. We shouldn't assume, automatically, that it is appropriate for Christians to work at the disciplines in the same way as the rest of the academic world...If it is important to our intellectual and spiritual health to understand these [disciplines], then what we must do, obviously enough, is use all that we know, not just some limited segment of it. Why should we be buffaloed (or cowed) into trying to understand these things from a naturalistic perspective? So the central argument here is simplicity itself: as Christians we need and want answers to the sorts of questions that arise in the theoretical and interpretative disciplines; in an enormous number of such cases, what we know as Christians is crucially relevant to coming to a proper understanding; therefore we Christians should pursue these disciplines from a specifically Christian perspective.⁹²

10. Conclusion

In this paper the question of whether process thinking can be helpful for examining mathematics from a Christian perspective has been examined. The foundations of process thought were explicated and it was characterized as a movement that emphasizes becoming over being

⁹²Alvin Plantinga, “On Christian Scholarship,” Virtual Library of Christian Philosophy. http://www.calvin.edu/academic/philosophy/virtual_library/articles/plantinga_alvin/on_christian_scholarship.pdf (accessed April 11, 2010).

and events over substance. When process thought has been applied to Christian doctrines it has led to a radical restatement of traditional beliefs. Process theology can ultimately be categorized as placing authority on the individual, rather than God. Process theology also has deep ties to the philosophy of mathematics, originally being put forward as an attempt to square the Christian understanding of God with advances in the field of mathematics such as Gödel's Incompleteness Theorem. This demonstrates that an examination of process theology is an important undertaking for Christian mathematicians. Once process theology is examined from a Christian perspective it must be rejected. By denying the authority of the Bible, God as Trinity, Jesus Christ as both fully God and fully man, the depravity of the human race, a substitutionary atonement view of the crucifixion, and the bodily resurrection of Jesus, process theology denies the very essence of Christianity. Therefore the mathematical contributions made by process thinking must be rejected (or obtained by different reasoning) because we as Christians cannot accept the methodology by which these contributions are reached. When pursuing mathematical inquiry as Christians, we must proceed from distinctly Christian presuppositions. This means we cannot rethink the classical doctrine of God in such a way that gives precedence to scientific and mathematical advances. Instead, we must interpret these new advances in light of our Christian convictions. This means we must view new mathematical advances with humility, rather than dogmatically proclaiming that we now have a way of finding more complete knowledge. The words of Blaise Pascal provide us a reminder of this point:

One must know when it is right to doubt, to affirm, to submit. Anyone who does otherwise does not understand the force of reason. Some men run counter to these three principles, either affirming that everything can be proved, because they know nothing about proof, or doubting everything, because they do not know when to submit, or always submitting, because they do not know when judgment is called for. Skeptic, mathematician, Christian; doubt, affirmation, submission (Penses, 170).

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