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A Mathematical Analogue for a Model of the Trinity

A Mathematical Analogue for a Model of the Trinity

Bill R. Williams and Mark S. Dickerson



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We believe in one God, Father, all-sovereign, maker of all things seen and unseen; and in one Lord Jesus Christ, the Son of God, begotten from the Father as only-begotten, that is, from the substance of the Father, God from God, light from light, true God from true God, begotten, not made, homoousios with the Father, through whom all things came into existence, the things in heaven and the things on the earth, who because of us men and our salvation came down and was incarnated, made man, suffered, and arose on the third day, ascended into heaven, comes to judge the living and the dead; and in one Holy Spirit. And those who say "there was once when he was not" or "he was not before he was begotten" or "he came into existence from nothing" or who affirm that the Son of God is of another hypostasis or substance, or a creature, or mutable or subject to change, such ones the catholic and apostolic church pronounces accursed and separated from the church.

— *The Creed of the Synod of Nicaea (June 19, 325).*¹

While we should continue to be concerned with logical consistency in expressing the doctrine of the Trinity, we cannot fully comprehend its mystery.

Of what use is it to discourse learnedly on the Trinity, if you lack humility and therefore displease the Trinity. ... I would far rather feel contrition than be able to define it. If you knew the whole Bible by heart, and all of the teachings of the philosophers, how would this help you without the grace and love of God? — Thomas á Kempis.²

Since the time of the early church fathers, theologians have struggled to understand the relationship between the three Persons of the Trinity. What came to be accepted as orthodox doctrine, the Nicene Creed, presents a logical and philosophical conundrum: How can we hold that there is only one God and at the same time hold that there are three distinct divine Persons, each of whom is God? In wrestling with this puzzle, writers have analyzed Scripture, imported terms such as *hypostasis* and *homoousios* from Greek philosophy,

employed the methods of logic and philosophy, and considered models and analogues from human experience. In recent decades, a number of scholars have studied the formal logic of the doctrine of the Trinity, including Rahner,³ Geach,⁴ Power,⁵ Cartwright,⁶ and Macnamara et al.⁷ However, as Poythress has pointed out, formal logic must take into account instantiation and association:

Within a Christian framework, the analogical character of categories makes it necessary to check on the content or meaning of each statement, and to evaluate it within a larger network of contexts, including the context of persons who are reasoning, the situation being reasoned about, and ultimately the context of God himself.⁸

While we should continue to be concerned with logical consistency in expressing the doctrine of the Trinity, we cannot fully comprehend its mystery. We can best approach this transcendent reality through the use of metaphor and analogy. The importance of

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an ongoing effort to gain insight into the Trinitarian mystery is underscored by the observation made by Timothy George⁹ in the February 2002 issue of *Christianity Today*:

Sadly, the doctrine of the Trinity may be the most neglected doctrine we hold. We are baptized in the name of the Father and the Son and the Holy Spirit. We often hear that wonderful Pauline benediction at the end of 2 Corinthians, "May the grace of the Lord Jesus Christ, and the love of God, and the fellowship of the Holy Spirit be with you all." The Trinity is essential to our statements of faith, our creeds, and our confessions. Yet we neglect it.¹⁰

Brief Overview of Trinity Models

In the first formal Trinitarian treatise that we have, *Against Praxeas*, Tertullian (ca. 160–220) employed a number of metaphors to describe the Father as the source of life, the Son as the agent of life and the Spirit as the giver of life. He coined the word "Trinity" and used the words "substance" and "person" in describing the relation of Father, Son, and Holy Spirit. He said that they relate to each other as a fountain, a stream, and a river or "the Father is the sun, the Son is its sunbeam whose point (apex) is the Holy Spirit, bearer of warmth and life."¹¹ Yet Tertullian held that there was a time before creation in which the Father existed without the Son.

In the fourth and fifth centuries, authors used both psychological and social analogies. Augustine focused on the concept of relationship: "The names, Father and Son, do not refer to the substance, but to the relation ..." ¹² The relationships that distinguish one divine being from another are eternal: the Father is always begetting, the Son is always being born, and the Spirit is always proceeding from the Father and Son.¹³ Similarly, Augustine used the analogy of lover, beloved, and love itself to describe the Trinity.¹⁴ He also spoke of a trinity in sight (the object that is seen, vision itself, and the attention of the mind),¹⁵ a trinity in the human spirit (mind or self-knowledge, self-love or self-esteem, and will)¹⁶ as well as a trinity in love. The idea expressed is that there are three faculties in humans that are not ultimately totally separate entities. The

problem with Augustine's analogies is that they fail to preserve the permanence of the distinction between the three elements.¹⁷ Also in the analogy of mind, self-esteem, and will, we have only one entity, the mind, and two of its states or activities.

Based on Augustine's analysis, Richard of St. Victor considered the implications of love as the basis of a proof for the doctrine of the Trinity.¹⁸ Richard distinguished the three Persons by their relations of love, with the Father as giver, the Son as receiver, and the Holy Spirit as gift.

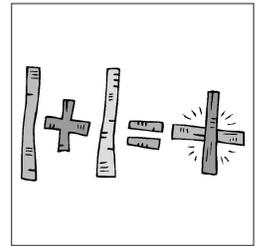
To give is the personal property of the unbegotten Father, to receive is the property that distinguishes the person of the Son, who also gives to the Holy Spirit, who is totally receptive from the Father and the Son from both of whom he simultaneously proceeds.¹⁹

Gregory of Nyssa noted that Peter, James, and John, being one in manhood, were called three men and argued that the three divine Persons have a similar relationship to the Godhead.²⁰ "[Indeed], there are many hypostases of the one man and [precisely] three of the one God."²¹

Gregory of Nyssa also used a scientific analogy, comparing the Trinity to colors of the rainbow:

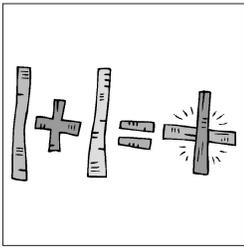
Now this brilliance is both continuous and divided. It is of many colours; it is of many forms; it is insensibly steeped in the variegated bright tints of its dye; imperceptibly abstracting from our vision the combination of many coloured things, with the result that no space, mixing or parting within itself the difference of colour, can be discerned either between blue and flame-coloured, or between flame-coloured and red, or between red and amber ...

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Newton's scientific approach to Christianity led him to serious reassessment of his beliefs regarding the miraculous and mysterious, even where that put him in conflict with accepted Church teaching.

As then in the token we clearly distinguish the difference of the interval between them; so in like manner conclude, I pray you, that you may reason concerning the divine dogmas; that the peculiar properties of the hypostases, like colours seen in the Iris, flash their brightness on each of the Persons ... but that of the proper nature no difference can be conceived of as existing between one and the other, the peculiar characteristics shining, in community of essence on each.²²

A contemporary of Thomas Aquinas, Bonaventure (1217–1274) wrote a book entitled *The Threefold Way* in which he based his threefold path to God on the numerous “trinities” found in nature:

So this is the three-day journey into the wilderness, or the three degrees of light within a single day: dusk, dawn, and noon. It represents the triple existence of things, that is existence in physical reality, in the mind, and in the Eternal Art ... It also represents the presence in Christ, our Ladder, of a triple substance, bodily, rational and divine.²³

In the seventeenth century, Isaac Newton deduced the characteristics of God from his analysis of the natural, physical order:

This most beautiful system of the sun, planets and comets could only proceed from the counsel and dominion of an intelligent and powerful Being ... He is eternal and infinite, omnipotent and omniscient; that is, his duration reaches from eternity to eternity; his presence from infinity to infinity; he governs all things, and knows all things that are or can be done ... We know him only by his most wise and excellent contrivances of things, and final causes; we admire him for his perfection; but we reverence and adore him on account of his dominion; for we adore him as his servants; and a god without dominion, providence and final causes is nothing else but Fate and Nature.²⁴

Newton's scientific approach to Christianity led him to serious reassessment of his beliefs regarding the miraculous and mysterious, even where that put him in conflict with accepted Church teaching. He held the doctrine of the Trinity to be a fraud,²⁵ and

compared the Trinity to three bodies, *a*, *b*, and *c*, only one of which contained gravity (*a*, the one representing the Father). He noted that if body *a* pressed down on the other two they would each apply a downward force, not because they contained gravity on their own, but that the force was communicated by body *a*.²⁶ Newton concluded from this that “by saying there is but one god, the father of all things, I deprive not ye son & holy ghost of the divinity wch they derive from ye father &c.”²⁷

Newton's contemporary, John Wallis, was also a mathematician and part-time theologian. Wallis, a firm believer in the Nicene Creed, illustrated relationships within the Trinity using the analogy of the three dimensions of a euclidian geometrical cube. “This longum, latum, profundum (Long, Broad, and Tall) is but One Cube; of Three Dimensions, and yet but One Body: And this Father, Son and Holy Ghost; Three Persons, and yet but One God.”²⁸

Moving to the twentieth century, Charles MacKenzie applied the concepts of Karl Heim in developing a model of the Trinity. Heim viewed reality as being comprised of various “spaces,” the non-objective space of personal relationships, the physical space of three dimensions, a suprapolar space which is the point of contact between the Infinite God and creation and the ultimate space being the omnipresence of God.²⁹ MacKenzie applies Heim's view of spaces and speculates:

Could it be that within God are three equal suprapersonal “dimensions” which interpenetrate each other (perichoresis) and yet which are eternally distinct and different? Just as the impersonal dimensions we experience, length and breadth and height, permeate each other yet are distinct from each other, so infinite suprapersons and the suprapersonal “dimensions” they create may permeate each other, being mutually dependent and mutually exclusive, without losing identity. Just as suprapolar space may encompass and permeate all lower spaces without absorbing or being absorbed by them, similarly the transcendent Trinity enfolds all reality in its suprapersonal love and power without absorbing or being absorbed by it.³⁰

While the approaches of Wallis and MacKenzie have much to commend them, neither model takes into account the relationship between the infinite nature of God the Father and the finite nature of his Son while Jesus lived on earth. We need to be able to reconcile the statements of Jesus that "I and the Father are one"³¹ and "He who has seen me has seen the Father"³² and the declaration of Paul that the fullness of the Godhead was in Jesus³³ with texts that indicate or imply that Jesus is a separate being from the Father. The passages that support the finiteness and distinctiveness of Jesus are numerous and include numerous references by Jesus to God in the third person or the first person plural,³⁴ Jesus' prayers to the Father,³⁵ texts that imply limitations to his powers,³⁶ Jesus' statements that he had been sent by the Father,³⁷ and Scripture passages concerning Jesus' humanity including the narratives of his birth, life, crucifixion, and death.³⁸

A Proposed Mathematical Analogue

With a sober nod to the advice of Thomas á Kempis and a firm declaration that no model conceived by human beings can capture the mystery of the Trinity, we suggest a mathematical analogue based on the concept of isomorphisms (systems or structures of like form) that may present a modest alternative to the analogues and metaphors that have been proposed as well as offer tentative suggestions for further exploration. While no model can provide us with a literal description of reality, this mathematical analogue offers three advantages in considering the Trinity: (1) the ability to work with finite and infinite concepts in an explicit manner using the notion of sets; (2) systems that have formal internal consistency; and (3) descriptors that may help provide clarity of meaning.

In order to accommodate the relationship between God the Father and God the Son described above, a model is needed in which two systems are structurally equivalent without being identical, one of the systems having infinite representations while the other is finite and the systems' relationships to each other are time-independent. The mathematical concept of an isomorphism allows us to develop systems in which these properties are present. For the sake of simplicity we will confine our isomorphism discussion to two systems representing the Father and the Son. However, natural extensions of the concepts presented could add a third system representing the Holy Spirit, only making the analysis a bit more complex and requiring more depth of mathematical description.³⁹ In order to strike a balance between readability and formal mathematical development of ideas and terms used, while retaining acceptable descriptive clarity, we will use mathematical terms informally in the text and occasionally include more technical information in the endnotes.

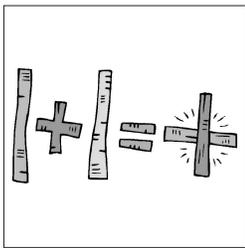
In basic terms, an isomorphism exists where two groups (or collections of elements with particular mathematical properties) are structurally identical. Relationships between the elements in the two groups are expressed in terms of a mapping function or rule in which every element in group A can be mapped to one and only one (or associated with exactly one) element in group A'.⁴⁰ We consider two different systems: System I deals with an abstract set of elements consisting of the whole numbers $W = \{0, 1, 2, 3, \dots\}$ and System II's mathematical description is motivated by the motion of a physical object.

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System I has as its elements five subsets: (i) all whole numbers that have a remainder of 0 when divided by 5; (ii) all whole numbers that have a remainder of 1 when divided by 5; (iii) all whole numbers that have a remainder of 2 when divided by 5; (iv) all whole numbers that have a remainder of 3 when divided by 5; and (v) all whole numbers that have a remainder of 4 when divided by 5. Notice that System I has as its elements five infinite sets: [0], [1], [2], [3], [4]. Each one is an infinite subset of the whole numbers and can be expressed as follows:

$$\begin{aligned} [0] &= \{0,5,10,15,20,25 \dots\} \\ [1] &= \{1,6,11,16,21,26 \dots\} \\ [2] &= \{2,7,12,17,22,27 \dots\} \\ [3] &= \{3,8,13,18,23,28 \dots\} \\ [4] &= \{4,9,14,19,24,29 \dots\} \end{aligned}$$

We introduce a type of addition for the 5 elements of System I and call it "addition modulo 5 (+5)," meaning that one can take any pair of the elements in System I and add them using addition modulo 5. For example, consider subset [1] = {1, 6, 11, 16, 21, 26, ...} and subset [3] = {3, 8, 13, 18, 23, 28, ...}. In order to add these two subsets using modulo 5 addition, we take any number out of [1] and any number out of [3], add them together using ordinary addition, and then find the remainder when that result is divided by 5. For instance, 11 from [1] and 23 from [3] will add under ordinary arith-



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metic to 34, and upon dividing by 5 yields a remainder of 4. Note that adding any number from [1] to any number from [3], using ordinary addition and then dividing by 5 will always yield 4, a number in [4]. Usual notation for the preceding description is to write $[1] +_5 [3] = [4]$, but keep in mind an infinite array of additions and divisions is represented in the symbolism $[1] +_5 [3] = [4]$.

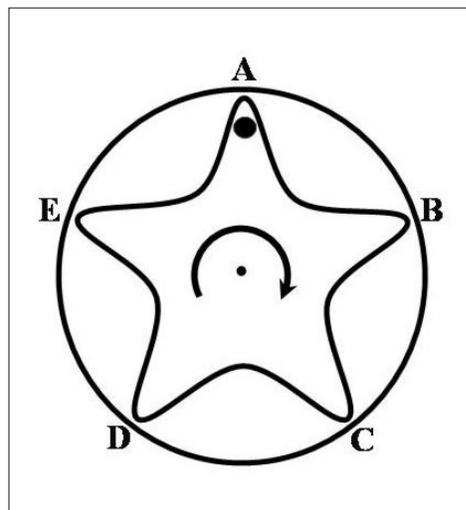
In a similar manner addition modulo 5 can be used with any two subsets in System I. Table 1 summarizes all the possible results that can occur with the $+_5$ addition on pairs of [0], [1], [2], [3], [4]. In the table the first term to be added is found in the first column, and the second term is found along the top row. The unique result for the modulo 5 addition of each pair is shown at the row/column intersection.

Table 1

$+_5$	[0]	[1]	[2]	[3]	[4]
[0]	[0]	[1]	[2]	[3]	[4]
[1]	[1]	[2]	[3]	[4]	[0]
[2]	[2]	[3]	[4]	[0]	[1]
[3]	[3]	[4]	[0]	[1]	[2]
[4]	[4]	[0]	[1]	[2]	[3]

System II is a physical system with a circular dial that has five elements (one with a dot for reference) and five setting positions: A, B, C, D and E. Setting A is the topmost

Figure 1



We consider two different systems: System I deals with an abstract set of elements consisting of the whole numbers $W = \{0, 1, 2, 3, \dots\}$ and System II's mathematical description is motivated by the motion of a physical object.

position and each of the other positions are equally spaced around the circle from position A. Thus B is 72° from position A in a clockwise direction, position C is 144° from position A, and D and E are at 216° and 288° respectively from position A. At 360° we are back at position A (which is equivalent to a 0° clockwise direction from position A). Figure 1 depicts the dial and the dotted point A, the initial or 0° rotation position.

The physical motions of the dial turned in a clockwise direction can be expressed in mathematical notation in the following manner: Let T be a 0° rotation of the dial and let T' be a 72° rotation of the dial. Continuing in like manner, we can write:

- T : 0° clockwise rotation
- T' : 72° clockwise rotation
- T'' : 144° clockwise rotation
- T''' : 216° clockwise rotation
- T'''' : 288° clockwise rotation

For pairs of rotations selected from the list of rotations presented, an operation of "and then" ($*$) is defined as follows: do the first rotation (first element of the pair) and then do the second rotation (second element of the pair.) For example, starting with the configuration of Figure 1, the pair of rotations (T' , T'''') with the operation $*$ results in the dotted point moving from position A to position B, "and then" to position E. The other points similarly move one position "and then" three positions. We observe that (T' , T'''') with the operation $*$, or ($T' * T''''$), is associated uniquely with (equivalent to) the rotation T'''' . Again for specificity (similar to the construction of Table 1), let the first term in the pair of rotations be taken from the first column in Table 2 and the second rotation be taken from the top row, entering the unique result at the row/column intersection.

Table 2

$*$	T	T'	T''	T'''	T''''
T	T	T'	T''	T'''	T''''
T'	T'	T''	T'''	T''''	T
T''	T''	T'''	T''''	T	T'
T'''	T'''	T''''	T	T'	T''
T''''	T''''	T	T'	T''	T'''

Establishing Structural Identity Between Systems I and II

If we now let * be replaced by +5 in Table 2, and T, T', T'', T''' and T'''' be replaced by [0], [1], [2], [3] and [4], respectively, then the two tables are shown to be identical. Here is what we have accomplished. We have shown structural identity between two seemingly quite different systems. System I was taken from the abstract set of whole numbers $W = \{0, 1, 2, 3, \dots\}$, divided into five infinite subsets on which we have shown an operation +5 for all the possible combinations of pairs [0], [1], [2], [3], [4]. System II was illustrated by a physical entity (a circular dial) that had five elements upon which an operation "and then" was defined for all possible pairs of elements (rotations).

In short, System I and System II have exactly the same structure (attributes), even though System I has an infinite number of different representations to express exactly the same structure as System II which has only a finite number of different expressions.

We have the two systems (representing Father and Son) that are distinctly different, one with infinite representations [System I] while the other has only finite expression [System II].

Now to establish the analogue, we associate the Father expression of the Trinity with System I with its infinite representation of attributes (structure). We similarly associate the Son with the finite attributes (structure) of System II. Hence, we have the two systems (representing Father and Son) that are distinctly different, one with infinite representations while the other has only finite expression. Furthermore, the relationship between the two systems is independent of time. Yet, they are identical in a very fundamental (structural) way. While these systems are simple, they do, in some rudimentary way, embody an analogue of the concept of the Trinity that we have set out to illustrate.

This analogue is consistent with Scripture's teaching regarding the Trinity. A number of texts, such as John 1:1 and Phil. 2:6, state that the "fullness of the Godhead" was in Christ before the Incarnation,⁴¹ and in John 1:14 and 1 John 1:1-3 we see that the "fullness of the Godhead" was

in Christ during the Incarnation while Jesus was on earth. Thus, from a scriptural point of view, the infinite nature of the Father was fully expressed through his Son.

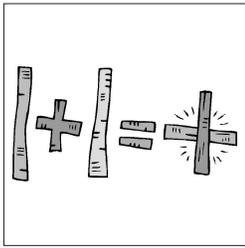
Further, if God's expression of the finite/infinite polarity of his Being through the Father/Son relationship is a constant, time-independent quality, we may consider the present "fullness of the Godhead" (after the Incarnation) as consistent with the constancy of the immanence of God in time and space. The Son is associated with the finite pole of the Godhead expression, reflecting the immanent nature of God, and the Father is associated with the infinite pole, reflecting the transcendent nature of God, not confined to time/space temporality. Under this view, Christ's statement that he was leaving and sending the Holy Spirit to do his work⁴² takes on the possible interpretation that the empowerment of the immanent nature of God in time and space (to accomplish God's purposes with his creation and humanity) is the Holy Spirit.⁴³ The Spirit is also in communication (harmony) with the Father (transcendent/infinite pole), bringing the dynamic quality of Christianity through the "fullness of the Godhead" inherent in Christ to every "present" time.⁴⁴ This provides us with a partial response to the concern expressed by Ted Peters when he asserts:

The fundamental issue regarding the Trinity is not the so-called threeness of God. It is rather the dynamism of the divine life that can redefine itself by self-separating and reuniting, by dying and rising.⁴⁵

Further Considerations

Some further ideas are now considered based on element notions regarding finite sets and infinite sets but without specifying structural properties between the sets such as those expressed in the previous development. In particular, we consider a significant enigma that is apparent regarding the Father and Son concepts of the Trinity and the death of Christ at Calvary. By associating the finite set generated from the points on the dial with Christ and the infinite set of whole numbers with the Father, we note a simple but perhaps conceptually helpful idea for considering the question: "How can God Incarnate (Christ) die and yet the Father abide?" With an infinite number of elements in the set associated with the Father, the nature of the transcendent God remains the same even if a finite number of his elements associated with (supervened upon) the human (finite) attributes of the Son cease forever. One can subtract a finite number of entities from an infinite set (like the finite and infinite sets we have just described) and still have an infinite set of the same type (attributes), although the resulting infinite set is not made up of exactly the same elements.

The notion that the death of Christ implies the death of God the Father is inconsistent with what Scripture teaches



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us about the suffering that Christ experienced in his separation from the Father, and the consequent suffering that the Father must have known with the death of his Son. How could the suffering and death in the immanent domain be known in the transcendent domain (in any meaningful or sustained way) if the transcendent domain could perish? If God were amorphous in both the immanent and transcendent domain, there would be no meaningful description of suffering in the Godhead. The symbolism of the atonement in the Old Testament sacrifices pointing to the One who would be the ultimate, perfect sacrifice as a propitiation for sin would have no meaning if the transcendent God could not sense or know of the suffering being expressed in Christ's death and especially the pain and suffering of separation from the Father that Christ knew on the cross. Moreover, Christ's claims that he would ascend to be with the Father after his death would be meaningless.⁴⁶ From a Christian perspective, if God ceased in totality, would this not imply the cessation of all things?

Perhaps one of the greatest reasons for the starkness of the finality of death is our awareness of death breaking all of our relationships in the temporal domain with no hope of restoration in that domain, as we know it. As Christians, we believe that the cessation of physical life only affects what we see and experience in the space/time continuum or immanent domain of God. But our faith would hold that in the transcendent domain there is still some quality of our existence that continues in some fashion or form (e.g., Christ's statement to the man on the cross, "Today you shall be with me in Paradise."). Hence, a possible partial interpretation of Christ's prayer regarding the coming crucifixion and his requesting, "Father, let this cup pass from me," is that from the moment of his physical death the expression of his earthly relationships changed.

However, this break in the space/time dimension would allow an additional quality in the relationship, a quality of completeness of the time/space relationship that could only occur from the Son's fulfillment of the provision for redemption through his obedience, death, and resurrection. Not only does this completeness affect time and space,

but it also affects the new heaven and the new earth, along with all qualities of the immanent and transcendent domains. Even in his appearance to Mary Magdalene at the tomb he indicated that he had a different body.⁴⁷ The humanity of Christ cried out with the same agony about physical death, as all humanity cries out regarding the crossing of this chasm, but in his spirit Christ knew a greater agony in death awaited him than just the physical aspect of dying. This is indicated by his statement on the cross about the Father forsaking him.⁴⁸ The forsaking was obviously not of a total or eternal nature, except for the Father forsaking the Son in the form of the separation brought about by the undeserved sin borne by the Son, which Christ in his humanity agonized over on the cross. At the moment of death the human time/space relationship with the Father was broken forever, as it is in any human death. But the quality of life that transcends the time/space continuum takes on a completeness and eternal quality that is the great hope and joy of Christians and, no doubt, Christ's faith from the human perspective allowed him to cross that chasm of physical death and spiritual agony with the assurance of the wholeness of the eternal relationship of the Father and Son that melded together the physical time/space life into the transcendent life with the Father.

While the continuing life of the Father was never interrupted, it surely bore the sorrow and the pain of the breaking of the time/space relationship with the Son. Thus, the atoning redemptive power of the crucifixion was brought to its fullness in the unimaginable agony of the dying of the Son with the inherent separation of the Son from the Father giving rise to the infinite suffering that could only be experienced by the living Father. The relationship of Christ the Son with the Father was transformed by death. In the Resurrection, a fulfilled relationship of the Son and the Father brings forth for humanity an expectation of an expression of completeness and unspeakable joy which can be shared by those who receive salvation and fellowship with God both in the immanent domain and in the transcendent domain. Thus, Christ was able to pay the price for sin making possible redemption and becoming the cornerstone for believers' faith and salvation. ✨

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Notes

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- ⁷J. Macnamara, M. L. P. Reyes, and G. E. Reyes, "Logic and the Trinity," *Faith and Philosophy* 11, no. 1 (January 1994): 3–18.
- ⁸V. S. Poythress, "Reforming Ontology and Logic in the Light of the Trinity: An Application of Van Til's Idea of Analogy," *Westminster Theological Journal* 57, no. 1 (Spring 1995): 210.
- ⁹Timothy George is a *Christianity Today* executive editor and dean of Beeson Divinity School at Samford University.
- ¹⁰Timothy George, "Is the God of Muhammad the Father of Jesus?" *Christianity Today* 40, no. 2 (February 4, 2002): 35. This article is adapted from his book *Is the Father of Jesus the God of Muhammad?* (Grand Rapids, MI: Zondervan, forthcoming).
- ¹¹Mary T. Clark, "The Trinity in Latin Christianity," in *Christian Spirituality: Origins to the Twelfth Century*, B. McGinn, J. Meyendorff, and J. Leclercq, eds. (New York: Crossroads, 1985), 276–90.
- ¹²Saint Augustine, *The Trinity* in vol. 45 of *The Fathers of the Church*, trans. Stephen McKenna (Washington, DC: Catholic University of America Press, 1963), 180.
- ¹³*Ibid.*, 180, 516–8.
- ¹⁴*Ibid.*, 271–3.
- ¹⁵*Ibid.*, 316–22.
- ¹⁶*Ibid.*, 425–8.
- ¹⁷An economic view of the Trinity conceives of the Son and the Holy Spirit as functions or expressions of God rather than distinct persons.
- ¹⁸Clark, "The Trinity in Latin Christianity," 286–9.
- ¹⁹*Ibid.*, 287.
- ²⁰Gregory of Nyssa, "Concerning We Should Not Think of Saying That There Are Three Gods to Ablasius," in W. G. Rusch, ed. and trans., *The Trinitarian Controversy* (Philadelphia: Fortress Press, 1980), 149–61.
- ²¹Quoted by C. Plantinga, Jr., "Trinity," *International Standard Bible Encyclopedia* 4 (Grand Rapids: Eerdmans Publishing Company, 1988), 919.
- ²²Quoted by David Brown, *The Divine Trinity* (London: Gerald Duckworth & Co., 1985), 285.
- ²³St. Bonaventure, "Mystical Opuscula," in *The Works of Bonaventure*, trans. Jose de Vinck (Paterson, NJ: St. Anthony Guild Press, 1960), 10.
- ²⁴A. R. Hall and L. Tilling, eds., "December 10, 1692," *The Correspondence of Isaac Newton*, 3 vols. (Cambridge: 1959–1977), III: 234–5.
- ²⁵Richard S. Westfall, *Never at Rest: A Biography of Isaac Newton* (New York: Cambridge University Press, 1980), 313ff.

²⁶Yahuda MS 14, ff., 173–3, cited in Westfall, *Never at Rest*, 317.

²⁷*Ibid.*

²⁸Wallis, "The Doctrine of the Blessed Trinity Briefly Explained in a Letter to a Friend," in Charles R. Roberts, "The Limits of Reason: John Wallis & His Theology; Orthodoxy, Religious Controversy & Natural Philosophy in Seventeenth-Century England" (master's thesis, Claremont Graduate School, 1995), 9. Another mathematician who sought evidence of the Trinity in mathematics was William Hamilton, a nineteenth-century scholar who invented the algebra of "quaternions" while seeking an algebra based on triples of numbers. See Gene B. Chase, "How Has Christian Theology Furthered Mathematics," in *The Role of Beliefs in Mathematics and the Natural Sciences: An Augustinian Perspective*, vol. 2 of *Facets of Faith and Science*, ed. Jitse M. van der Meer (Lanham, MD: University Press of America, 1996), 202–4.

Fifteenth century theologian Nicholas of Cusa also considered an analogy from geometry. In *De venatione sapientiae*, Cusanus suggests a geometrical model of the Trinity in which the Trinity is a "perfect triangle with three perfect sides." The "two equal sides of a right triangle are constructed and the arc of the circle whose radii are formed by the two sides is to be drawn so that the third side of the triangle is the chord corresponding to the arc." The sides of this triangle are extended to infinity. Cusanus claims that at some point in the expansion, the two sides, the chord, and the arc of the circle all become the same infinite straight line. Quotations translated by Clyde Lee Miller in *Reading Cusanus: Metaphor and Dialectic in a Conjectural Universe* (Washington, DC: The Catholic University of America Press), 224–5.

²⁹Karl Heim, *Christian Faith and Natural Science* (New York: Harper and Bros., 1953).

³⁰Charles S. MacKenzie, *The Trinity and Culture* (New York: Peter Lang Publishing, Inc., 1987), 111–2.

³¹John 10:30.

³²John 14:9.

³³Col. 2:9. In commenting on this passage, Greek scholar A. T. Robinson notes that Paul is saying that "'all the *pleroma* of the Godhead,' not just certain aspects, dwells in Christ and in bodily form ... dwells now in Christ in his glorified humanity ..." A. T. Robinson, *Word Pictures in the New Testament IV* (Nashville: Broadman Press, 1931), 491.

³⁴For example, see Luke 22:28 where Jesus states: "My Father has granted me a kingdom" and John 14:23 in which Jesus says: "If anyone loves me, he will keep my word; and my Father will love him, and we will come to him, and make our abode with him." See also, Matt. 6:30, 33; 7:21; 10:33; 11:25–27; 16:15–17; 18:19; 26:39, 42, 64; Mark 15:34; Luke 2:49, 11:2; 22:28; 23:34, 46; John 14:15–18. The authors would like to thank Jim Armstrong, CIAS Programs Director, for pointing out these passages.

³⁵See, e.g., Matt. 26:42 and many of the texts cited in endnote 26.

³⁶For example, note Mark 6:4–6, in which Jesus tells his disciples: "A prophet is not without honor except in his hometown and among his own relatives and his own household. And he could do no miracles there except that he laid his hands upon a few sick people and healed them."

³⁷See, e.g., Matt. 15:24, John 3:16–17, and Luke 10:16.

³⁸At the outset we have the question of whether God can experience physical death. In addition, Jesus refers to being forsaken by God (Mark 15:34), and committing his spirit to God (Luke 23:46).

³⁹Taken from Col. 2:9, New American Standard translation.

⁴⁰Rather than suggesting a third system to represent the Holy Spirit such that all three systems are isomorphic, we will propose later in the paper that perhaps the Holy Spirit can be envisioned in relation to the particular systems developed and the rule of association between them. Many homomorphisms (isomorphisms) could be constructed other than the one presented in this paper that could allow for more meaningful interpretations, but considering the increased complexity of the mathematical concepts needed to construct more interpretive models, the authors decided on the ones presented in order to minimize the mathematical conceptualizations needed.

Article

A Mathematical Analogue for a Model of the Trinity

⁴¹From a mathematical point of view, groups are said to be isomorphic (or structurally identical) if they differ only in the names of their elements. An isomorphism of group A onto group A' is a homomorphism that is one to one and onto A'. A map of group A into a group A' is a homomorphism if and only if $\phi(ab) = \phi(a)\phi(b)$ for all $a, b \in A$. See John B. Fraleigh, *A First Course in Abstract Algebra*, fifth ed. (Reading, MA: Addison-Wesley Publishing Company, 1993), 161–226; Richard Laatsch, *Basic Algebraic Systems: An Introduction to Abstract Algebra* (New York: McGraw-Hill Book Company, 1968), 76–96.

⁴²John 14:26; Acts 1:4–5.

⁴³Ted Peters, *God as Trinity: Relationality and Temporality in Divine Life* (Louisville: Westminster/John Knox Press, 1993), 14.

⁴⁴E.g., John 20:17; John 14:1–3.

⁴⁵John 20:17.

⁴⁶Another way to view the Holy Spirit in the Godhead expression in the model presented would be to associate the notion of the Holy Spirit with the relationship between System I and System II that is expressed by the mapping or rule that prescribes the correspon-

dence of elements between the two systems. Then the finite is constantly associated with the transcendent (Father) and empowered through the Holy Spirit's presence. The time independent quality of the mapping or rule between the two systems provides for an "always" component for the two systems we have used and the relationship between them. This economic Trinity concept of the Holy Spirit as a mapping relationship is not unlike that of Nicholas of Cusa who considered the Holy Spirit to be the nexus between the Father and the Son. See Cusanus' *De visione Dei*, chap. 17 and *De pace fidei*, chap. 8, 24.

⁴⁷The proposed analogue using isomorphisms allows us to consider the role of Holy Spirit in either an economic or immanent Trinity. From an economic Trinity perspective, the Holy Spirit may function as a mapping relationship or nexus between the two systems. Within an immanent Trinity, the Holy Spirit may be seen as a distinct infinite system which remains in eternal communication with the Father and the Son.

⁴⁸Mark 15:34.

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