

# Hope and Metamathematics

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## **Hopefully Yours: Interdisciplinary Essays on Hope from Scientific and Religious Perspectives**

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# Hope and Metamathematics

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Hope is a powerful four-letter word and it conveys the idea of looking forward with confidence of fulfillment. My hope for those reading this article is that their faith in a higher reality will be enhanced. I have come to experience and realize there are powerful spiritual energies that are manifested to humanity for which science cannot adequately prescribe an experiment.

Faith, hope, and love are three great virtues, *three things that, in the end, last*.<sup>1</sup> Together they consent to accept life's challenges as they are dealt out. Our faith must be intelligent, our hope realistic and undying, and our love encompassing. If love *is the greatest of these three*,<sup>2</sup> then hope is not far behind being nudged along by faith. Every person is made strong in the hope of solving life's pressing problems.

The first words attributed to God in the Bible are, "*Let there be light*," and this first manifestation of the divine command gives to light a place of special significance in creation. Can there be any doubt that when God saw "*how good the light was*," that God's supernatural hope permeated the creation that followed.

Light, therefore, precedes hope and has a multiplicity of interpretations. First there is physical light as that of the sun. It is interesting to note that a Newsweek article<sup>3</sup> on deep space indicates that some scientists have concluded that the stars of the universe ignited in one great burst, "as if every chandelier in a mansion were flicked on simultaneously on a moonless night." This could have happened because the universe was much smaller some eleven billion years ago. Now our galaxy has about two stars per year turned on.

There is also metaphorical light, relating to the common usage of, “I saw the light,” meaning “I now understand.” When God speaks and says, “*Let there be light,*” we can, in this sense, interpret it as God saying, “Let it now be understood that I Am,” that “I exist.” Also one speaks of seeing “light at the end of the tunnel,” not in the sense of a near death experience, but rather in being optimistic and having hope that the challenge being faced has a satisfactory ending in sight. If God is hopeful in us, and I believe that is so, we in turn have the obligation to follow suit. If and when we encounter difficulties or despair we are empowered to release the hope that is part of us since creation and let it flow freely into our consciousness so as to become a guiding light for our subsequent actions.

Words and their meanings play an important part in our lives. The prologue to John’s Gospel starts with the same three words as Genesis, “*In the beginning.*” The “*Word*”, as John mentions, is synonymous with Jesus Christ, and if we Christians are to be at one with the Christ then our “words” need to be in resonance with his. Today we are simply inundated with words that most often seek particular advantage at the expense of the community. With so many words being uttered, the truth of important matters seems to get lost in the noisy background. These are critical times when hopeful words are needed and in the present environment they may be difficult to hear. We have allowed words to be cheapened, depriving them of their appropriate power. Isaiah 55:11, attributed to God<sup>4</sup>, gives us an idealization of the fruitfulness of words spoken by a righteous person gifted with wisdom. Words are meant to have life and carry a spiritual power in order to accomplish God’s will. This is exemplified by the words of Jesus which were recognized as commanding a spirit of authority.<sup>5</sup>

In the prologue to his Gospel, John expands on the interplay of the “Word” and “life” for the “light” of men. Words that have life give enlightenment and for John there is “*the light that shines in the darkness*

*that did not overcome it.*” One expects the interpretation of these words to be strictly metaphorical, however they also relate to a third variation of light, namely, “uncreated light.” This is a category of “uncreated energy” introduced by the early theologians of the Eastern Orthodox Church. “Uncreated” is used as a descriptor because there is no apparent or natural source of energy that causes the result and in this sense is distinct from any created thing. This kind of light is associated with Christ’s transfiguration (also identified as the light of Mt. Tabor), the glow on the face of Moses when he came down from the mountain, and the real light encountered in mystical experiences. In what follows I am considering a particular type of spherical light manifestation that occurs outside the person. Furthermore, I rule out the light associated in near-death experiences, light experienced by a person in an artificially induced state (drugs, medication, etc.), the light associated with UFO’s, or the eureka experience of coming upon a solution “as if a brilliant light has suddenly been turned on.” The situation of prayer and/or meditation is not considered to be an altered state.

Many analysts have associated the images of light in mystical experiences as somehow originating from the personal consciousness, however on occasion God might well choose to come into human history under the appearance of light. The image “*God is light*” (1 John 1:5) points to the concept that uncreated light can be interpreted as a symbol of God’s presence.

From a scientific perspective, light is the radiative aspect of electromagnetic interactions, (EMI), and L. Fagg<sup>6</sup> notes that EMI may furnish a common connection between spiritual and physical realities. Fagg also gives a number of examples from humankind’s spirituality, different from the ones cited here.

I contend, *mirabile dictu*, that uncreated light is real, is actual, it *is*. There are numerous references, from early centuries to the present, of mystical appearances of light(s), and reliable testimony of actually seeing

it outside of one's self. What can science and theology say about these happenings? What is the energy source of these manifestations? What is the relationship of these experiences to contemporary paradigms of the Christian Trinity, especially the difference between the Eastern and Western views? Has there been too little attention paid to these types of manifestations in the sense that perhaps we are forgetting that revelation emerges in diverse ways, some of which are clearly not conducive to scientific experimentation?

Of particular interest and emphasis are the comparable light experiences of Gregory Nazianzus, Symeon, Gregory Palamas, Ignatius of Loyola, among others. Symeon, the New Theologian, one of the great Hesychast saints (10th century) of the East uses *light* often in his writings. He viewed God as *Friend* and claimed the light he experienced was real. "For Symeon, Christ is conceived spiritually and substantially in the mystic by way of the Holy Spirit. Mystical union with the Trinity is experienced as *a triple light in unity* caused by the Holy Spirit." <sup>7</sup>

"You appeared as light illuminating me completely from Your total light.<sup>8</sup> ...."

"I have often seen the light <sup>9</sup>..."

"Frightful thing in truth, Master, frightful beyond all expression, that the Light which the world does not possess shows itself to me,..."

The historical evidence of *uncreated light* is irrefutable; it is an ancient revelation that continues to the present day. The language of trinitarian light goes back to the Cappadocians, and Gregory Nazianzen mentions one and three lights<sup>10</sup>.

“When I speak of God, you should feel yourselves bathed in a single light and in three lights ... There is undivided division, differentiated unity. One only in the Three: such is the godhead. The Three as One only: they are the Three in whom is the godhead, or, to speak more precisely, the Three who are the godhead.”

After Symeon, the Hesychast monks' experience of God as light was confronted and questioned. Gregory Palamas (1296-1359) came to their defense and argued that the divine energies manifest the Godhead in an effulgence of light that is possible for human beings to see, God willing ([Egan], 310-320). “This light”, he said, “is not a hallucination but will remain for eternity, and has existed from the beginning.” Palamas' Trinitarian theology was in terms of distinction in God between essence, person, and uncreated energy. The Hesychasts believed that the Holy Spirit reveals himself as a transforming light that can be seen in this life. Baarlam, a Callabrian monk, who denied that one could have a direct experience with God, fiercely attacked their beliefs. He denounced these heretical praying monks *who contended they could see the Trinity with their physical eyes*. This brings in my contention that while Palamus<sup>11</sup> used light metaphorically as LaCugna claims ([LaCugna], 184), it is not the only way. Its use stemmed from actually seeing the *uncreated light*, and when he refers to it this way it is usually clear. Gregory, like Symeon, always insisted that *uncreated light* is an actual experience of God, not a symbol or a metaphor for intellectual understanding.<sup>12</sup>

These experiences also bear similarity to the particular images described in the writings of Ignatius of Loyola:<sup>13</sup>

“([34] Thus, Mar 6) I felt and saw, not obscurely, but clearly and very clearly, the very Being or Essence of God, under the figure of a sphere, slightly larger than the sun appears...

.. [t]he same Being and spherical vision appeared again to me: I saw the Three Divine Persons, in the manner of the first, i.e., The Father on the one hand, the Son on the other, and the Holy Spirit on the other, all proceeded or exited from [it seemed to me] the Divine Essence without leaving the frame of the vision of the sphere.”

(Sunday, March 30)<sup>14</sup> ...During these periods, several times, I had the vision of the Divine Being in circular form as before....”

The description of “all three coming forth, without leaving the spherical vision” is clearly similar to the primary relationships we have been discussing. The presence of real spherical *light* is clearly stated and therefore the existence of an energy source is a reasonable scientific conclusion. It is said that Ignatius wrote some mathematical equations in the margins of these writings.

Regardless of differing opinions as to the meaning and importance, the spiritual experience of one light followed by three is worthy of further

investigation by those knowledgeable in such matters. Saints document it in their holiness and sinners in their conversions. The scientist always finds a challenge when encountering physical phenomena that does not have obvious energy sources and the theologian can do the same for this physical reality that cannot be duplicated in the laboratory. Relativity Theory and Quantum Mechanics are two scientific paradigms that began by observing anomalies in the behavior of light and end with new and very radical understandings of reality. Can the uncreated light anomaly lead to even a slight paradigm shift that brings Eastern and Western Christianity to improved mutual understanding of the Trinity? I am hopeful that it can.

Since One and Three are revealed in such a manner, they are metamathematical numbers, and do lead to seven,<sup>15</sup> the number of perfection significant in almost every culture. In mathematics one can relate as to how three objects can combine,<sup>16</sup> individually, in pairs, or all together. For our case this leads to  $C(3,1) + C(3,2) + C(3,3) = 3 + 3 + 1 = 7$ , and the seven distinct regions of the Venn diagram yield a visual relationship. I leave the implications, the relational possibilities on how unity can be understood and differentiated, to the theologians and their understanding of this spiritual dimension.



Dimension in some form or another permeates most topics in mathematics and therefore impacts scientific explanation. A recent magazine article<sup>17</sup>, in discussing science and religion interviewed a number of scientists and contained these quotes that use the idea of dimension metaphorically.

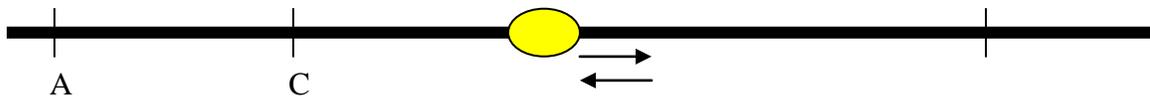
“Science and religion are dealing with different dimensions of reality, different levels of experience. Anybody who thinks that everything in the world can be explained in a

reductionist, materialistic way is naive.” (Francis Ayala, priest, geneticist)

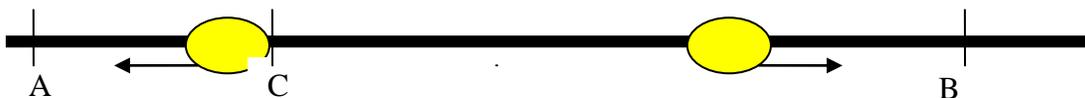
“Everything we know about nature is in accord with the idea that the fundamental process of nature lies outside space-time.” (Henry Stapp, physicist, Berkeley)

“Science and religion complement one another. They really don’t conflict but they don’t entirely exist on the same plane.” (Kenneth Kendler, psychiatrist, geneticist, Medical College of Virginia)

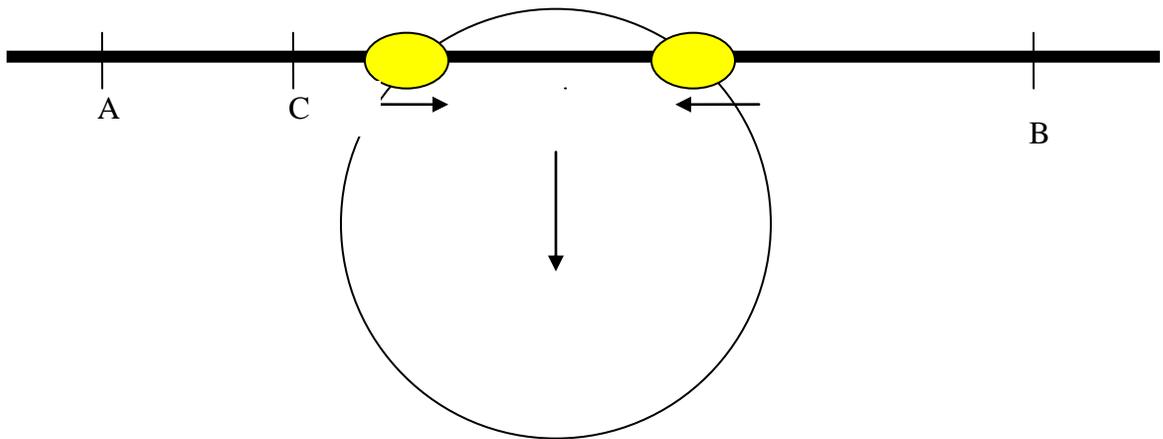
Let us consider a simple observational example involving dimensionality.<sup>18</sup> Imagine observers in a one-dimensional world experiencing the appearance of light as indicated in the diagram. If the light were to slightly move back and forth, all observers would report the event with no conflict in their descriptions until it again moved out of their dimension and could not be seen.



Now, however, let a light occur and split into two lights, with one moving to the west, slightly passing C, the other to the east, then both returning to their starting point and disappearing.



The observer at A notes a light which moves west, then east, then disappears; the observer at B reports the light moved east and then west, in complete opposition to observer A. The observer at C sees the westerly motion but when it passes him a bifurcation takes place in that the light appears to split into two parts and both motions are visible. His observations can resolve the conflict between what A and B see. All report the truth of what they see from their perspectives, however, observer C can be considered to be in a privileged position with regard to the event that occurred. Even if there is agreement on what occurred, the reality of the event may involve at least the next higher dimension, an aspect that completely escapes the one-dimensional observers. The reality in this contrived case is a two-dimensional circle moving from north to south and passing through the one-dimensional line with the lights occurring at the intersecting circumference points.



This simple paradigm illustrates the concept of perspectivity in that our seeing can be greatly influenced by the position from which we view events. A scientist at A looks at a phenomena quite differently from the theologian at B, whereas someone versed in both areas may be in a privileged position and likened to observer C who may be able to give coherence to otherwise opposed viewpoints. However, complete comprehension may not be possible within the confines of our limited understanding of both physical<sup>19</sup> and spiritual dimensions.

F. J. Tipler begins his book, *The Physics of Immortality*,<sup>20</sup> on the premise “that a human being is a purely physical object, a biochemical machine completely and exhaustively described by the known laws of physics.” Monod<sup>21</sup> believes that

...The ancient covenant is in pieces; man [sic] knows at last that he is alone in the universe’s unfeeling immensity, out of which he emerged by chance.

Such scientists believe that science is based strictly upon reason and any theological truth based on spiritual revelation is to be dismissed. This attitude avoids dealing with spiritual realities for which science cannot adequately prescribe an experiment. The scientist may expect a complete and precise description of conditions under which repeatability and testability are to take place but such criteria are too stringent for the theologian. There is, however, a repeatability over chiliads taking place in the particular type of uncreated light we have discussed. My present reality is confident and hopeful

that *we are not alone*<sup>22</sup>, the *New Covenant*<sup>23</sup> is intact, and we are more<sup>24</sup> than mere biological machines.

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<sup>1</sup> 1 Corinthians 13:13

<sup>2</sup> Ibid

<sup>3</sup> Begley, Sharon, *When Galaxies Collide*, Newsweek, p. 36, 11/03/97

<sup>4</sup> So shall my word be that goes forth from my mouth; It shall not return to me void, but shall do my will, achieving the end for which I sent it.

<sup>5</sup> Mark 1:27. And they were amazed so that they questioned among themselves, saying, “What is this? A new teaching! With authority he commands even the unclean spirits, and they obey him.”

<sup>6</sup> Credo, The Universality of Electromagnetic Phenomena and the Immanence of God in a Natural Theology, *Zygon*, Sept. 1996, Vol.31, No.3, pp. 509-521.

<sup>7</sup> Transl by deCatanzaro, *Symeon. the New Theologian*, Paulist Press, 1980.

<sup>8</sup> Ibid.

<sup>9</sup> V. Lossky, *The Vision of God*, Transl by A. Moorhouse, American Orthodox Press, Clayton, WI, 1963, pp. 118-119.

<sup>10</sup> Oliver Clement, *The Roots of Christian Mysticism*, New City Press, 1995, pp.66-67. Gregory Nazianzen, *Oration*, 39,11(PG 36,345).

<sup>11</sup> C. M. LaCugna, *God For Us: The Trinity and Christian Life*, Harper, San Francisco, 1991, Chapter 6, the Teaching of Gregory Palamas, pp180-205. Numerous references at the chapter's end.

<sup>12</sup> J. Meyendorf, *Gregory Palamas and Orthodox Spirituality*, St. Vladimir's Seminary Press, 1974, p. 116.

<sup>13</sup> A.T. deNicolas, *Powers of Imagining: Ignatius of Loyola*, SUNY Press, 1986, p. 211.

<sup>14</sup> Ibid. Erroneously noted as Sunday, March 31 on p. 222.

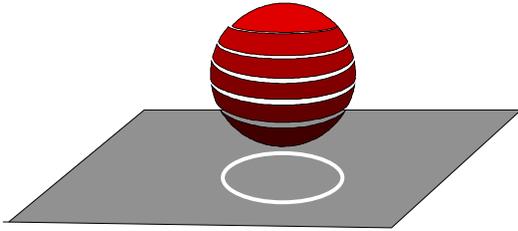
<sup>15</sup> . Tertullian has called God “Septemplex,” the seven –fold Holy Spirit who radiates in the darkness. Most likely he refers to the seven spirits surrounding the throne as written in the Book of Revelation. I leave the theological interpretation to the experts.

<sup>16</sup> N items can be arranged k ways according to the formula  $C(n,k) = n! / \{(n-k)! k!\}$ .

<sup>17</sup> G. Slack, *When Science and Religion Collide or why Einstein wasn't an atheist*, Mother Jones, December 1997.

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<sup>18</sup> The classic examples of Flatland discuss life in a two-dimensional world where a similar example of the sphere passing through the plane could be used. Observers inside and outside the circle can be considered.



<sup>19</sup> The limitations are acknowledged in various ways. In the *Report of the Senior Assessment Panel for the International Assessment of the U.S. Mathematical Sciences*, March 1998, Appendix 3, “Possible Trends in Coming Decades” by Michael Gromov it is noted: “As the power of computers approaches the theoretical limit and as we turn to more realistic (and thus more complicated) problems, we face the “curse of dimension” which stands in the way of successful implementations of numerics in science and engineering.”

<sup>20</sup> F.J. Tippler, *the Physics of Immortality*, Doubleday, 1994.

<sup>21</sup> R.J. Russell, *Theistic Evolution*, *Newsletter of The Center for Theology and the Natural Sciences*, Winter 1995, p. 20.

<sup>22</sup> Matthew 28:20: “...and know that I am with you always until the end of the world.”

<sup>23</sup> Jeremiah 31:31-34: “... But this is the covenant which I will make with the house of Israel... I will place my law within them and write it upon their hearts; I will be their God and they shall be my people. No longer will they have need to teach their kinsmen how to know the Lord. All, from the least to the greatest, shall know me...”

Luke 22:20: “This is the *new covenant* in my blood...”

<sup>24</sup> 2 Corinthians 5:17: “This means that if anyone is in Christ, he is a new creation.”