Inklings Forever: Published Colloquium Proceedings 1997-2016

Volume 7 *A Collection of Essays Presented at the Seventh Frances White Ewbank Colloquium on C.S. Lewis & Friends*

Article 11

6-3-2010

Mere Mathematics: The Role of Mathematics in the Apologetic Works of C.S. Lewis

Matt D. Lunsford
Union University

INKLINGS FOREVER, Volume VII

A Collection of Essays Presented at the Seventh
FRANCES WHITE COLLOQUIUM on C.S. LEWIS & FRIENDS
Taylor University 2010
Upland, Indiana

Mere Mathematics

The Role of Mathematics in the Apologetic Works of C. S. Lewis

Matt D. Lunsford

Clive Staples Lewis (1898-1963) was one of the intellectual giants of the 20th century and arguably the most influential Christian author of that period. In spite of his own personal lack of success in the area of mathematics, C. S. Lewis exhibited a lofty appreciation of the discipline as demonstrated by his numerous references to mathematics and to mathematical objects, and by his recurrent use of mathematical terminology, in his apologetic writings. This paper will explore two broad categories of the role of mathematics in these works: 1) the relationship between mathematics and certain laws, and 2) the use of geometry and the concept of dimension. Even though Lewis could not tame the lion mathematics, he was able to appreciate and articulate the beauty and power of the discipline he never mastered, and that is true genius.

Lunsford, Matt D. "Mere Mathematics: The Role of Mathematics in the Apologetic Works of C.S. Lewis" Inklings Forever 7 (2010) www.taylor.edu/cslewis

Mere Mathematics:
The Role of Mathematics in the Apologetic Works of C. S. Lewis

Matt D. Lunsford, Union University

Clive Staples Lewis (1898-1963) was one of the intellectual giants of the 20th century and arguably the most influential Christian author of that period. Lewis was born in Belfast, educated at Oxford, and taught medieval and Renaissance literature at both Oxford and Cambridge. As a scholar, he made significant contributions to the areas of literary criticism, children's literature, and fantasy literature. His conversion to Christianity is well documented in his autobiography *Surprised by Joy*, and gave rise to a body of apologetics works. In spite of his own personal lack of success in the area of mathematics, C. S. Lewis exhibited a lofty appreciation of the discipline as demonstrated by his numerous references to mathematics and to mathematical objects, and by his recurrent use of mathematical terminology, in his apologetic writings. This paper will explore how Lewis used mathematics, the discipline and specific content, extensively in these works.

Lewis' mathematical career was less than spectacular. He enjoyed all mathematics that involved mere reasoning but was less fond of mathematical calculation. He admits that he "could never have gone very far in any science because on the path of every science the lion mathematics lies in wait for you." (Lewis, Surprised by Joy 137) In his early training at Oldie's School, Lewis credits only some geometry and grammar as accomplishments. His tutelage later under Kirk (Mr. Kirkpatrick) proved indispensable for Lewis' ratiocination skills. It was with Kirk that he prepared for his first attempt at *Responsions*, a required examination at Oxford that included elementary mathematics. Lewis was not successful on his first attempt and continued to prepare for the exam with Mr. Campbell. His preparation included algebra, a subject for which Lewis had a personal dislike – "devil take it!" (Lewis, Surprised by Joy 187) He never passed *Responsions*; however, due to his service in World War I, he was granted a waiver. Lewis claims that, without this exemption, his career at Oxford would have concluded prematurely.

Two broad categories will be considered when exploring Lewis' use of mathematics in his apologetic writings: 1) the relationship between mathematics and certain laws and 2) the use of geometry, especially the concept of dimension. The first category refers to the use of mathematics, either because of a widely held viewpoint about the discipline or because of the attributes of a specific mathematical example, to elucidate the distinction of three laws. The second category refers to the utilization of geometry and spatial dimensions either to resemble or to exemplify a point of difficulty for the reader.

In *Miracles*, Lewis states that rational thought and the conscience of man are not products of the system of Nature. He refused to accept a "behavioristic theory of logic, ethics, and aesthetics." (Lewis, Surprised by Joy 208) This led him to consider the relationship between mathematics and three laws: the laws of thought, the laws of morality (Natural Law), and the laws of nature.

In perhaps his greatest compliment to the discipline, Lewis states, "Pure mathematics is the type of successful thought." (Lewis, God in the Dock 65) To him, the laws of thought were seen to be self-evident and could not be changed, for to modify the laws of thought would, in essence, nullify the ability to reason and thus leave one in the situation of not being able to know anything about reality, "in other words, unless Reason is an absolute–all is in ruins." (Lewis, The Weight of Glory 103) The laws of arithmetic were seen to be in the same position. Since the

simple rules of arithmetic follow deductively from self-evident axioms, just as rational thinking follows from the laws of thought, these rules are immutable. A multiplication table is self-evident once the simple operations of arithmetic are learned. As Lewis remarks, "We all learned the multiplication table at school. A child who grew up alone on a desert island would not know it. But surely it does not follow that the multiplication table is simply a human convention, something human beings have made up for themselves and might have made different if they had liked?" (Lewis, Mere Christianity 24)

Suppose one wants to put this Reason to work to discover truths about the universe. How can one be sure that a belief is actual truth and not just wishful thinking? To address this question, Lewis uses an analogy from arithmetic. "Suppose, I think, after doing my accounts, that I have a large balance at the bank. And suppose you want to find out whether this belief of mine is 'wishful thinking'. You can never come to any conclusion by examining my psychological condition. Your only chance of finding out is to sit down and work through the sum yourself. When you have checked my figures, then, and then only, will you know whether I have that balance or not. If you find my arithmetic correct, then no amount of vaporing about my psychological condition can be anything but a waste of time. If you find my arithmetic wrong, then it may be relevant to explain psychologically how I came to be so bad at my arithmetic, and the doctrine of the concealed wish will become relevant – but only after you have yourself done the sum and discovered me to be wrong on purely arithmetical grounds. It is the same with all thinking and all systems of thought. If you try to find out which are tainted by speculating about the wishes of the thinkers, you are merely making a fool of yourself. You must first find out purely on logical grounds which of them do, in fact, break down as arguments. Afterwards, if you like, go on and discover the psychological causes of the error." (Lewis, God in the Dock 272-273) So, according to Lewis, the logical procedure needed to correct a mistake in arithmetic displays a prototype of successful rational argumentation. Lewis was so bothered by the modern method of debate which assumes that one is wrong and then argues *why* he is wrong rather than demonstrating *that* he is wrong, that he gave it a name – "Bulverism". (Lewis, God in the Dock 273)

What does Reason have to say about the truth claims of Christianity? Lewis draws upon his arithmetical analogy: "But, of course, being a Christian does mean thinking that where Christianity differs from other religions, Christianity is right and they are wrong. As in arithmetic – there is only one right answer to a sum, and all other answers are wrong: but some of the wrong answers are much nearer being right than others." (Lewis, Mere Christianity 43) In a different work, he asserts, " I was taught at school, when I had done a sum, to "prove my answer." The proof or verification of my Christian answer to this cosmic sum is this. When I accept Theology I may find difficulties, at this point or that, in harmonizing it with some particular truths which are imbedded in the mythical cosmology derived from science. But I can get in, or allow for, science as a whole. Granted that Reason is prior to matter and that the light of that primal Reason illuminates finite minds, I can understand how men should come, by observation and inference, to know a lot about the universe they live in. If, on the other hand, I swallow the scientific cosmology as a whole, then not only can I not fit in Christianity, but I cannot even fit in science." (Lewis, The Weight of Glory 105-106)

Can one really conceive of an alternate set of moral laws? In *Mere Christianity,* Lewis answers, "Think of a country where people were admired for running away in battle, or where a man felt proud of double-crossing all the people who had been kindest to him. You might just as well try to imagine a country where two and two made five." (Lewis, Mere Christianity 19) He then adds, "It seems, then, we are forced to believe in a real Right and Wrong. People may be

sometimes mistaken about them, just as people sometimes get their sums wrong; but they are not a matter of mere taste and opinion any more than the multiplication table." (Lewis, Mere Christianity 20) Lewis argues that the discipline of mathematics is analogous to Natural Law for two compelling reasons: 1) the basic laws of mathematics are unchanged by time and culture and "though there are differences between the moral ideas of one time or country and those of another, the differences are not really very great – not nearly so great as most people imagine – and you can recognize the same law running through them all" (Lewis, Mere Christianity 24-25) and 2) there is a standard in both mathematics and Natural Law which is independent of personal or public opinion. As Lewis writes, " The moment you say that one set of moral ideas can be better than another, you are, in fact, measuring them both by a standard, saying that one of them conforms to that standard more nearly than the other. But the standard that measures two things is something different from either. You are, in fact, comparing them both with some Real Morality, admitting that there is such a thing as a real Right, independent of what people think, and that some people's ideas get nearer to that real Right than others." (Lewis, Mere Christianity 25)

Assuming that there is a Real Morality, how can an individual use this fact to make proper moral decisions? Just as constructing a rational argument requires knowledge of the laws of thought, moral decision-making requires acknowledging the existence of self-evident truths of Natural Law. Lewis calls this collection of truths "the *Tao*" and claims that, "Unless you accept these without question as being to the world of action what axioms are to the world of theory, you can have no practical principles whatever. You cannot reach them as conclusions: they are premises." (Lewis, The Abolition of Man 52-53) In the essay "Why I Am Not a Pacifist", Lewis provides a straightforward method of reasoning that involves three elements: 1) the reception of facts, 2) the recognition of self-evident truths (which Lewis calls intuition), and 3) the logical arrangement of "facts so as to yield a series of such intuitions which linked together produce a proof of the truth or falsehood of the proposition we are considering." (Lewis, The Weight of Glory 54) Lewis uses another mathematics analogy, this time from geometry, to illustrate this process. Now the geometric proof is the prototype. If a correct geometric proof is well crafted, then "each step is seen by intuition, and to fail to see it is to be not a bad geometrician but an idiot." (Lewis, The Weight of Glory 54) Lewis does add that, " You can invent a simpler proof, that is, a simpler concatenation of intuitable truths. But when you come to an absolute inability to see any one of the self-evident steps out of which the proof is built, then you can do nothing." (Lewis, The Weight of Glory 55) While admitting that moral decision-making does not admit the mathematical certainty of a geometric proof, he employs this method of reasoning to construct an argument for why he is not a pacifist.

Consider one final remark regarding Natural Law. In countering the argument that the current state of human knowledge, especially scientific knowledge, has led humans to the point that one can no longer hold to the unchanging dogmas of Christianity, Lewis notes that "wherever there is real progress in knowledge, there is some knowledge that is not superseded. Indeed, the very possibility of progress demands that there should be an unchanging element....I take it we should all agree to find this sort of unchanging element in the simple rules of mathematics. I would add to these the primary principles of morality. And I would also add the fundamental doctrines of Christianity." (Lewis, God in the Dock 45) Hence, for Lewis, the three realms of mathematics, morality, and Christianity exhibit instances of static knowledge that will never be replaced. As for progress, Lewis issues this warning: "If you are on the wrong road, progress means doing an about-turn and walking back to the right road; and in that case the man who turns back soonest is the most progressive man. We have all seen this when doing arithmetic.

When I have started a sum the wrong way, the sooner I admit this and go back and start over again, the faster I shall get on." (Lewis, Mere Christianity 36-37)

How does one understand the physical world? Lewis offers, "As regards material reality, we are now being forced to the conclusion that we know nothing about it save its mathematics. The tangible beach and pebbles of our first calculators, the imaginable atoms of Democritus, the plain man's picture of space, turn out to be the shadow: numbers are the substance of our knowledge, the sole liaison between mind and things." (Lewis, God in the Dock 46) Mathematics provides the language for expressing the laws of nature, which are the result of observed consistency and assumed uniformity in the universe. Lewis argues that by using only the method of historical probability, "we cannot say that uniformity is either probable or improbable." (Lewis, Miracles 165) Moreover, Lewis maintains that, "Three conceptions of the 'Laws' of Nature have been held. (1) That they are mere brute facts, known only by observation, with no discoverable rhyme or reason about them. We know that Nature behaves thus and thus; we do not know why she does and can see no reason why she should not do the opposite. (2) That they are applications of the law of averages. The foundations of Nature are in the random and lawless. But the number of units we are dealing with are so enormous that the behavior of these crowds (like the behavior of very large masses of men) can be calculated with practical accuracy. What we call 'impossible events' are events so overwhelming improbable–by actuarial standards–that we do not need to take them into account. (3) That the fundamental laws of Physics are really what we call 'necessary truths' like the truths of mathematics–in other words, that if we clearly understand what we are saying we shall see that the opposite would be meaningless nonsense." (Lewis, Miracles 88-89)

As the laws of nature follow inductively from the observation of regularity, it remains a possibility that the laws could be violated from the outside. In fact, Lewis claims that none of the three theories prevents the Supernatural from invading Nature. The first two theories are easily addressed as the first gives no rhyme or reason why things are as we observe and thus no reason why they should continue in the same pattern, and the second, which depends on the law of averages, will work only for *undoctored* Nature and the question of whether or not miracles occur is precisely the question of whether Nature is ever doctored. As for those who hold to the third theory, Lewis claims that even this theory does not prevent the Supernatural from invading Nature: "If the laws of Nature are necessary truths, no miracle can break them: but no miracle needs to break them. It is with them as with the laws of arithmetic. If I put six pennies into a drawer on Monday and six more on Tuesday, the laws decree that–*other things being equal*–I shall find twelve pennies there on Wednesday. But if the drawer has been robbed I may in fact find only two. Something will have been broken (the lock of the drawer or the laws of England) but the laws of arithmetic will not have been broken." (Lewis, Miracles 92) In particular, if the laws of nature state that the consequent B (12 pennies) follows from the antecedent A (6 pennies plus 6 pennies), and if a miracle occurs, and the expected B is not observed, it is not that the laws of nature have been violated but simply that the antecedent is no longer A but is really A'. In other words, as long as nothing from outside of nature interferes, one expects the universe to obey these laws. If, however, something were to interfere, that would not be breaking the laws of nature, as those laws were never meant to account for such things.

What is the relationship between Reason (which follows from the laws of thought) and Nature (which demonstrates its own laws)? Lewis describes the connection by appealing to the mathematical idea of a relation that is "unsymmetrical". (Lewis, Miracles 39) A relation is simply a set of ordered pairs that is a model for almost any type of association between objects

(people, animals, things, etc.). For example, suppose that Joe and Sue are siblings with common father Bill. Then "being a sibling" is a relation and mathematically one would say that the ordered pair (Joe, Sue) is in the relation. Clearly (Sue, Joe) is also in the relation (as Sue and Joe are siblings is also true); thus the relation exhibits symmetry. If, on the other hand, the relation were defined by "being a parent of", then neither (Joe, Sue) nor (Sue, Joe) would be in the relation; however, (Bill, Joe) and (Bill, Sue) would be. Notice that neither (Joe, Bill) nor (Sue, Bill) would be in this second relation as neither Joe nor Sue is the father of Bill; thus the relation "being a parent of" fails to have symmetry. Lewis claims that an analogous asymmetrical relationship exists between Reason and Nature. Reason can act upon Nature to change it, but the reverse is not possible. For example, Reason can alter physical nature through the use of mathematics (e.g. bridges, air conditioning, engineering) and can alter psychological nature through arguments applied to our emotions. However, Nature has no such claim on Reason. When nature attempts to interfere with human consciousness, this simply is to produce Nature and to suspend Reason as "Nature is quite powerless to produce a rational thought: not that she never modifies our thinking but that the moment she does so, it ceases (for that very reason) to be rational." (Lewis, Miracles 38)

In several works Lewis mentions the term "Flatlander", which is an obvious reference to the classic work *Flatland* by Edwin A. Abbott. The main character in Abbott's book is A. Square, a "Flatlander" who lives in a two-dimensional world known as Flatland. Square encounters difficulties both in explaining his world to an inhabitant of Lineland (a one-dimensional world) and in grasping the geometry of Spaceland (a three-dimensional world). Lewis writes these words: "A world of one dimension would be a straight line. In a two-dimensional world, you still get straight lines, but many lines make one figure. In a three-dimensional world, you still get figures but many figures make one solid body. In other words, as you advance to more real and more complicated levels, you do not leave behind you the things you found on the simpler levels: you still have them, but combined in new ways – in ways you could not imagine if you knew only the simpler levels." (Lewis, Mere Christianity 142) Lewis suggests that Christians meet difficulties in their Faith that render them in ways like an inhabitant of Flatland trying to understand a solid object. In particular, Lewis uses the correlation of dimensions as an analogy for the concepts of the Trinity, time and eternity, and temporal versus eternal existence.

The doctrine of the Trinity espouses the triune personality of one Being. Lewis compares this incomprehensible concept of one Being consisting of three Persons to the geometric fact that a cube is composed of six distinct squares yet remains a single cube: "In God's dimension, so to speak, you find a being who is three Persons while remaining one Being, just as a cube is six squares while remaining one cube. Of course we cannot fully conceive a Being like that; just as, if we were so made that we perceived only two dimensions in space we could never properly imagine a cube." (Lewis, Mere Christianity 143) The quote contains a hidden reference to Abbott's book. Elsewhere, Lewis is more explicit: "Flatlanders, attempting to imagine a cube, would either imagine the six squares coinciding, and thus destroy their distinctness, or else imagine them set out side by side, and thus destroy the unity. Our difficulties about the Trinity are of much the same kind." (Lewis, Christian Reflections 79-80) In contrast, Lewis comments that the Pantheist, even though he may claim a super-personal God, in actuality conceives of a sub-personal God "as though the Flatlanders thought a cube existed in fewer dimensions than a square." (Lewis, Miracles 136) Instead of a Being with a real character of its own, his God "becomes simply 'the whole show' looked at in a particular way or the theoretical point at which all the lines of human aspiration would meet if produced to infinity." (Lewis, Miracles 131)

Lewis proposes that God is not at all in the human timeline. God sits above, beyond in such a way that He does not experience a moment that has passed but rather experiences all moments as the present: "If you picture Time as a straight line along which we have to travel, then you must picture God as the whole page on which the line is drawn." (Lewis, Mere Christianity 148) So, time is one-dimensional and God is not confined to that single dimension. As for eternity, Lewis remarks, "If we think of time as a line–which is a good image, because the parts of time are successive and no two of them can co-exist; i.e., there is no width in time, only length–we probably ought to think of eternity as a plane or even a solid. Thus the whole reality of a human being would be represented by a solid figure." (Lewis, The Problem of Pain 125) Eternity is depicted as at least two-dimensional when compared to one-dimensional time and the totality of human existence is seen as three-dimensional.

In exploring the relationship between temporal and eternal life, Lewis writes, "Suppose that the earthly lives she and I shared for a few years are in reality only the basis for, or prelude to, or earthly appearance of, two unimaginable, supercosmic, eternal somethings. Those somethings could be pictured as spheres or globes. Where the plane of Nature cuts through them–that is, in earthly life–they appear as two circles (circles are slices of spheres). Two circles that touched." (Lewis, A Grief Observed 24) Here, Lewis chooses the sphere as the solid to represent the full reality of human existence. The cross-section of that reality which is experienced in earthly life is symbolized by the figure of a circle. Moreover, his married life with Joy Davidman is portrayed as the intersection of their two individual circles. The analogy echoes the manner in which the figure of a square and the solid of a cube were used to illustrate the concept of the Trinity.

Moreover, in the essay "Transposition", Lewis puts forward the juxtaposition of a richer system to a poorer system to further explain the relationship between the spiritual life and the natural life. Lewis gives an example of the richer and poorer that is readily experienced, namely emotions and sensations. The emotional life is "richer" than the life of sensations because human nerves produce the same sensation to express more than one emotion. For instance, both joy and sorrow often yield tears. It is impossible to find a one-to-one correspondence between such systems and "the transposition of the richer system into poorer must, so to speak, be algebraical, not arithmetical." (Lewis, The Weight of Glory 77) The most famous example, claims Lewis, is from the art of drawing. "The problem here is to represent a three-dimensional world on a flat sheet of paper. The solution is perspective, and perspective means that we must give more than one value to a two-dimensional shape. Thus in drawing a cube, we use an acute angle to represent what is a right angle in the real world. But elsewhere an acute angle on the paper may represent what was already an acute angle in the real world, for example, the point of a spear or the gable of a house. The very same shape which you must draw to give the illusion of a straight road receding from the spectator is also the shape you draw for a dunce's cap." (Lewis, The Weight of Glory 78) Lewis states that to recognize the spiritual life one must approach this notion of Transposition from above "as we all do in the case of emotion and sensation or of the three-dimensional world and pictures, and as the spiritual man does" (Lewis, The Weight of Glory 81-82) otherwise one will reach incorrect conclusions. For without Transposition, the natural life will appear to be all there is. "The brutal man never can by analysis find anything but lust in love; the Flatlander never can find anything but flat shapes in a picture; physiology never can find anything in thought except twitching of the grey matter. It is no good browbeating the critic who approaches Transposition from below." (Lewis, The Weight of Glory 81)

Lewis claims the principle of Transposition might also enlighten the doctrine of the Incarnation. In *Miracles*, Lewis perceives the Incarnation as God descending into humanity just as the Supernatural descends into the Natural. Lewis states, "We catch sight of a new key principle–the power of the Higher, just in so far as it is truly Higher, to come down, the power of the greater to include the less. Thus solid bodies exemplify many truths of plane geometry, but plane figures no truths of solid geometry." (Lewis, Miracles 178) Once again Lewis uses the concept of dimensionality to elucidate his ideas. In this analogy, the Divine Incarnation is as a proposition in solid geometry that generalizes this truth in plane geometry – humans exist as composite moral rational creatures, purely natural in many ways but nonetheless more than just natural beings. Conversely, just as no truths of solid geometry are revealed by plane figures, there remain facts beyond human comprehension: "I do not think anything we do will enable us to imagine the mode of consciousness of the incarnate God. That is where the doctrine is not fully comprehensible." (Lewis, Miracles 177)

Furthermore, Lewis offers that the principle of Transposition might illuminate the doctrine of the resurrection of the body. Lewis contends that the New Nature that is being created through the Son, is interlocked in ways with the Old Nature, in a manner similar to the way that "some facts about a solid body are facts of linear geometry." (Lewis, Miracles 251) The New Nature might be able to perceive dimensions beyond what is now observed: "It is useful to remember that even now senses responsive to different vibrations would admit us to quite new worlds of experience: that a multi-dimensional space would be different, almost beyond recognition, from the space we are now aware of, yet not discontinuous from it: that time may not always be for us, as it now is, unilinear and irreversible: that other parts of Nature might some day obey us as our cortex now does." (Lewis, Miracles 250) With the resurrection of Christ, "a wholly new mode of being has arisen in the universe," (Lewis, Miracles 241) says Lewis, a body that belongs to the category of New Nature and that "is differently related to space and probably time, but by no means cut off from all relation to them." (Lewis, Miracles 241) As for the complete expression of redeemed humanity, Lewis proposes, "It is like when you throw a stone into a pool, and the concentric waves spread out further and further. Who knows where it will end?" (Lewis, The Great Divorce 106)

The two categories, namely the relationship between mathematics and specific laws and secondly the employment of geometry and dimension, have been thoroughly examined. Through comparison and contrast, analogy and illustration, simile and metaphor, concepts and terminology, C. S. Lewis, in his apologetic writings, demonstrated a high regard for the discipline of mathematics. His admiration of the subject matter extended to praise for its practitioners. Mathematicians "propound mathematical theorems in beleaguered cities" (Lewis, The Weight of Glory 43) and contemplate "timeless and spaceless truths about quantity." (Lewis, The Great Divorce 213) Elsewhere, he writes that "a mathematician's mind has a certain habit and outlook which is there even when he is not doing mathematics." (Lewis, Mere Christianity 77) Even though Lewis could not tame the lion mathematics, he was able to appreciate and articulate the beauty and power of the discipline he never mastered, and that is true genius.

Acknowledgements

The author gratefully acknowledges the paper (Neuhouser) as a major source of inspiration for this article. The author also wishes to thank Union University for its support of this research through the Pew Summer Research Grant program. Finally, the author wishes to express his gratitude to Dave Neuhouser, Hal Poe, and Kim Jongerius for their valuable comments and suggestions.

Works Cited

Lewis, C. S. A Grief Observed. New York: HarperCollins, 2001.
—. Christian Reflections. Grand Rapids: Eerdmans, 1994.
—. God in the Dock. Grand Rapids: Eerdmans, 1994.
—. Mere Christianity. New York: Touchstone: Simon & Schuster, 1996.
—. Miracles. New York: HarperCollins, 2001.
—. Surprised by Joy. San Diego: Harcourt, 1966.
—. The Abolition of Man. New York: Simon & Schuster, 1996.
—. The Great Divorce. New York: Touchstone: Simon & Schuster, 1996.
—. The Problem of Pain. New York: HarperCollins, 2001.
—. The Weight of Glory. New York: Touchstone: Simon & Schuster, 1996.
Neuhouser, David L. "Higher Dimensions in the Writings of C. S. Lewis." Faculty Dialogue 23 (1995).