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Redeeming the Symbols: Madeleine L'Engle and the Interpreting of Contemporary Geometry in the Christian Tradition

by C. Christopher Smith

Many things around us can be symbols, pointing us beyond the surface of things toward deeper levels of meaning: e.g., objects, pictures, people, words, concepts, etc. How often though do we sit down and absorb the meanings of the multitude of symbols that surround us every day? Furthermore, what types of symbols register most frequently in our conscious minds? Madeleine L'Engle addresses these questions in her book *A Stone for a Pillow*. She worries that we all too often posit the worst possible meaning for the symbols we encounter. What we need to do instead, she insists, is to seek out the good, the beautiful and the true in the symbols around us, even in those symbols typically endowed with negative meanings. In so doing, we "redeem the symbols," creatively imbuing them with meanings that serve to edify and enrich.

L'Engle's thoughts emerge from the Christian tradition, which has a long history of redeeming the symbols. Perhaps the most powerful example is that of the cross, which—before Christ—signified crime and horrific death, but afterwards became a symbol of hope and life. Despite the church's all-too-frequent inquisitions and narrow-mindedness, I believe that the most vital eras in its history and its most fruitful minds have been characterized by the hope found in the

redemption of symbols. For instance, St. Paul found God symbolized in the altar of the unknown deity on Mars Hill (Acts 17). St. Thomas Aquinas took the symbols of Aristotelian philosophy and constructed a model that incorporated faith and reason. More recently, Thomas Merton found the love of Christ exhibited in the Eastern symbols of Zen and the Tao Teh Ching.

In this tradition of hope, I would like to offer a few thoughts on the redemption of some of the symbols that I, as a philosophy of mathematics student, know intimately—i.e., those of contemporary geometry. These thoughts have been inspired to a large extent by Madeleine L'Engle, and indeed the framework of this presentation is formed by three of the most prevalent theological themes in her writing. Although in some sense the whole of contemporary geometry is a symbol for me, I have selected two aspects of contemporary geometry that are particularly symbolic for me—the irregular curvature of space and the foundational axiomatic structure. Geometry has long stood as a bold paragon of the power and certainty of systematized human reason, and as such has served as an inspiration for modern philosophers, particularly Descartes, Kant, and logical positivists of the twentieth century—

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whose work was characterized by the reduction of science to logic. However, these two aspects of contemporary geometry represent for me some of the most basic principles of the Christian faith, which stand in sharp contrast to the presumptuous rationalism of modernist interpretations of geometrical theory.

Before I begin discussing these geometrical symbols, it will be helpful to quickly overview the history of geometry and its philosophical interpretations. The ancient Greek geometer Euclid, in a text called the *Elements*, offered a model of flat, plane geometry that is essentially the same as that taught today in high school classrooms everywhere. For almost two millennia after its writing in 300 BC, this epic geometrical work was taken as a true description of the structure of physical space. The *Elements* also contributed a rational methodology—namely, the axiomatic method, by which one can develop a massive system of knowledge (theorems) from a very small set of self-evident propositions (postulates, also called axioms) using logic. Albert Einstein once said of the *Elements*, “This admirable triumph of reasoning gave the human intellect the necessary confidence in itself for its subsequent achievements.” For all its success, Euclidean geometry was afflicted with a minor flaw; namely, that one of its foundational postulates was slightly less than self-evident. This parallel postulate says, in essence, that given a line and a point not on the line, there is exactly one line through the point that is parallel to the original line. Although questions had been raised about this postulate since the earliest days of the *Elements*, it was not until the eighteenth century that it faced significant challenges. Among these challenges was the fact that no inconsistencies could be found,

when the postulate was replaced by one of its two negations—i.e., there are no parallel lines through the point or an infinite number of parallel lines.

Since no inconsistencies emerged, the non-Euclidean geometries were derived in the mid-nineteenth century by replacing the parallel postulate with one of its negations. These non-Euclidean geometries are characterized by defining space as curved, instead of accepting the Euclidean notion of flat space. At first, they were regarded as mere logical curiosities, but in the latter half of the nineteenth century, astronomical research showed that space was indeed slightly curved over vast distances. One should note that the curvature of space in the early non-Euclidean geometries was constant and regular. In the twentieth century, Einstein’s theory of general relativity posited that not only was space curved, it also possessed—unlike the original non-Euclidean geometries—an irregular curvature based on the gravitational pull of large masses in space. Despite much philosophical speculation in the latter half of the twentieth century about how it is to be interpreted, the theory of general relativity represents the most current understanding of the geometrical structure of space.

Einstein’s above quote about Euclid’s *Elements* captures the essence of the modern philosophical understanding of geometry. Philosophically, geometry has long been regarded as the paragon of certainty. There are two primary senses in which geometry is believed to be certain: first, in the derivation of its theorems from its postulates, and secondly, in its depiction of the structure of space—a much bolder claim. Descartes, the father of modern philosophy, says in the dedicatory letter to his *Meditations*, “I judge that those [philosophical demonstrations] of which I here

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make use are equal to, or even surpass in certainty and evidence, the demonstrations of Geometry." He then proceeds in this work to form a philosophical model that, in a similar fashion to geometry, builds a vast propositional structure upon the foundation of a minimal number of postulates. The work of Descartes, taking its inspiration from geometry, marked the opening of the modern era of bold human reason. The human race now was capable of developing vast systems of knowledge about the universe, through sheer reason. Thus, science blossomed into the primary mode of human knowing. Geometry has stood throughout the modern era, not only as an inspiration but also as an ideal toward which all other epistemological systems would strive. This is particularly evidently in the work of the twentieth century logical positivists—who, inspired by Hilbert's proof that geometry was in essence merely logic, believed that all science could be reduced to logic. Thus, in the following discussion, I want to focus upon three facets of the modern interpretations of geometrical symbols that, as a Christian, I find disturbing—namely, its certainty, its epistemological boldness and its necessarily systematic nature. For each of these aspects, I hope to provide alternate interpretations that are more harmonious with the Christian Faith, yet remain true to the contemporary understanding of geometry.

Two different modes of certainty within geometry were mentioned above. In the first of these modes, there is little room for questioning the certainty of geometry; in as far as one accepts a given geometry's definitions and postulates, the geometrical theorems necessarily follow logically and certainly from these foundations. However, one must question the latter sense of geometric certainty—i.e., is geometry certain in its

depiction of physical space? I maintain that contemporary geometry, and particularly its irregularly curved space, tells us that we do not, and cannot, know with absolute certainty the exact physical structure of space.

Mystery has long been a vital part of the Christian tradition. St. Paul refers repeatedly to the mysteries of Christ and the Gospel (Colossians 2:2-3, Ephesians 6:19, I Corinthians 4:1, et al). The recognition and the celebration of mystery, follows in reverence from the omnipotence and omniscience of the Creator and the relative impotence and ignorance of humankind. Although the concept of Mystery is absent in the typical evangelical church today, it is a principle that the church has historically embraced. Madeleine L'Engle speaks out of that historic Christian tradition when she says, "[The Word made flesh] is a mystery that cannot be understood in terms of provable fact" (The Rock That is Higher 216). In addition to the Mystery of the Creator, contemporary geometry also seems to indicate that Creation itself is also shrouded in mystery. It follows from the general theory of relativity, as mentioned before, that space is irregularly curved, based on the positioning of extremely massive bodies. We do not know, and probably will never know, the exact location and mass of all bodies in space, and thus the impact that these factors have on the curvature of space. Our geometry can therefore never be fully certain in its depiction of space and must be endowed with a hearty measure of mystery. Just as the Christian tradition holds that our theological propositions are inadequate to describe God fully, we analogously find that our geometric propositions are inadequate to provide a full description of space.

Christianity maintains that, as a consequence of the Divine Mystery, the human attitude should be characterized by humility.

The Scriptures are full of exhortations to humility. Jesus himself offers the paradoxical statement in Matthew 23:12 RSV that, "Whoever exults himself will be humbled and whoever humbles himself will be exulted." We see that this admonition not only advocates humility, but also cautions against pride. Similar warnings against the dangers of pride, are at least as common throughout the Scriptures as exhortations to humility (see for example, Proverbs 16:18, Mark 7:21-23, etc.) Similarly, Madeleine L'Engle says in *A Stone for a Pillow*: "The most brilliant people don't know very much [We should ask questions, but] never with pride. Never with being sure that I am right and everyone else is wrong" (58). Due to these strong charges to humility in the Christian Scriptures and Tradition, I find myself unsettled by the proud epistemological claims of modern interpretations of geometry. What basis do we have for asserting that we know, with certainty, the full geometrical structure of the universe? It seems that, in a similar fashion to the Christian Faith, humility stems from mystery in our interpretation of the geometry.

Indeed, I think there is a caution here for all our philosophical endeavors. As was mentioned earlier, geometry provided the inspiration and the foundation for much of modern philosophy. Thus, it is not surprising to find that modernist thought is typically characterized by bold claims of what can be known and also of what human reason can achieve. I think the example of geometry should also serve as a caution for philosophers and scientists, warning against the dangers of overstatement and reminding us to be humble in light of the basic mystery of Creation.

If Creation is indeed a mystery, then the normative question arises: How should we go about describing it in humility? To answer this

question, I would like to draw upon another essential principle of the Christian Faith—namely, narrative. In so far as the Scriptures are foundational to the Christian tradition, narrative is also essential, for the Scriptures themselves are, as a unit, the story of God's interaction with humankind. As I understand it, narrative is also diametrically opposed to systematization, although the two may have similar ends. Systematization is very rigid, objective, lifeless, and the ideas it conveys are cut and dry. Thus, there is a chasm between the thinker and the ideas, which are objects independent of his/her person. On the other hand, narrative is not so neat; it is more organic and engages its participants, bringing them face-to-face with the ideas at hand. Narrative also, while not fully subjective, does incorporate an element of the subjective as it engages its participants. A perfect example of the distinction between system and narrative in the Christian tradition is found in the teachings of Jesus. He did not expound a system of theological or moral propositions, but rather taught primarily through parables, which drew the listener in and gently prodded him/her toward the meaning.

One aspect of the narrative-systematization distinction that will prove particularly important in the interpretation of contemporary geometry is how each of these approaches handles facts. Ideological systems are founded, and thrive, upon facts. If one were to undermine the facts of a particular system, it would collapse. Thus, a system must necessarily take facts very seriously. On the other hand, narrative is not committed to the strict acceptance of facts, but instead to the essence that these facts convey. Narrative also serves better than systematization at communicating mystery; Madeleine L'Engle says in *The Rock That is Higher*, "Mystery . . .

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can only be understood mythically” (216). Thus, one theme conveyed throughout L’Engle’s writings is that the Christian Scriptures, which are the narrative means for communicating the divine Mystery and are undoubtedly True from beginning to end, are not necessarily thoroughly factual. She says: “The Bible is not objective. Its stories are passionate, searching for truth (rather than fact), and searching most deeply in story” (The Rock That is Higher 92). Thus, I think the Scriptures provide an excellent model for how we should understand geometry. Contemporary geometry, as described above, provides—in some sense—a true account of physical space, although it might not be perfectly accurate in its describing of every region of space. The pertinent facts in contemporary geometry are the locations of massive bodies in space and therefore also the curvature of space. Part of the inherent mystery of Creation is that we do not know the location of all masses in space, and thus we also do not know the curvature of space in its every region. However, despite these limitations, our geometrical descriptions are pragmatically true or, in the words of philosopher of science Bas van Fraassen, they are “empirically adequate.” In other words, our geometry takes into account all the facts observable at the present, and its descriptions are a sufficient and useful basis for our other scientific and technological investigations—particularly physics or engineering. However, we cannot say with any certainty what effect unobservable facts—e.g., unseen distant stars or planets of unknown mass—will have on our geometry.

Thus far, I have said nothing about the objectivity or subjectivity of geometry, an important distinction between the narrative and the systematic approaches. It must be said

that geometry is indeed largely objective. Due to its axiomatic structure, its theorems are derived by logic, and in that sense are clearly objective. The definitions and postulates are taken as true by everyone in the mathematical and scientific communities, and thus, since its foundations are taken as true and its theorems are objectively derived through logic, it is also objective in the sense of being globally accepted as true, and not catering to individual tastes. However, it is not objective in the sense of being absolutely true, as a systematization—at least *prima facie*—must necessarily be. For instance, take an intelligent being on a very distant planet, and say that her geometry is exactly the same as ours, except that it incorporates a different system of observable massive bodies—which is to be expected, since her point of view on the universe is quite different than ours. Similarly, our geometry will change overtime, as we discover new masses in the distant reaches of space. Thus, it seems clear that there definitely is an element of subjectivity involved in contemporary geometry, which means that a purely systematic account is inadequate. Our interpretations of geometry—based on symbols, such as its irregularly curved space and axiomatic structure—seem therefore to be more analogous to narrative than to systematization. Perhaps it is safer to say that geometry need not be understood as mere systematization, and that it can be understood as having aspects which closely resemble those of narrative.

I hope these examples have served to demonstrate that one need not accept humanistic or mechanistic interpretations of contemporary geometry. Instead, the symbols of geometry (or geometry itself as a symbol) can be “redeemed,” to some extent, by discovering meanings in them that harmonize

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with the truths of the Christian Faith. One is not compelled to find certainty in geometry or its symbols, but instead may find a fount of mystery. Likewise, one is not compelled to accept the proud epistemology of modern geometrical interpretations, but rather may find a stream of humility born of mystery. Finally, one is not compelled to understand geometry and its structure as purely systematic, but instead may find an interpretation that is more reminiscent of narrative.

I have spoken here about the symbols of geometry, for they are the tools of my trade. These geometric symbols are, of themselves, neither Christian nor anti-Christian. However, they can take on such meanings through various interpretations. As a Christian, I consider it a matter of integrity—literally, wholeness—that I interpret these symbols of my vocation in a manner that is consistent with the Christian Faith and that exalts the person of Jesus Christ. Of course, I cannot however take credit for these interpretations. I believe that they, as all good things, are a gift of God through the Holy Spirit (James 1:17). Thus, I pray with Madeleine L'Engle that the Holy Spirit may indeed come upon all of us, and that all our symbols—vocational and otherwise—will be redeemed, so that we might sing in great harmony, our many diverse voices, joining in the great eternal song of Creator and Creation.

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