

Stratford Caldecott's *Beauty for Truth's Sake*

notes by David Alexander

Introduction

Stratford Caldecott opens the introduction to his book by emphasizing the current fragmentation in the discipline of education, a divorce between the arts and sciences, and a divorce between faith and reason. A supine surrender to science and technology that is shaping our futures has serious, unmistakable symptoms and danger signs and it makes us less than human. Education is our path to true humanity and wisdom. He does not mean by education merely what goes on in the universities, which is sometimes the reverse path. He stresses life-long learning and our need for a skill in how to keep learning.

There is a profound, dualistic malaise in our civilization. The divisions between arts and sciences, faith and reason, and nature and grace are rooted in this dualism and in a failure to understand human reason and its true grandeur.

Caldecott states his purpose in writing this book as "an attempt to discover and enter creatively into that Pythagorean spirit which lies at the root of Western civilization." He hoped that *ressourcement*, a "return to sources," in particular the pattern of humane living as it was traditionally understood in the West, will lead to a renaissance, the birth of a culture more appreciative of life and wisdom.

Pope Benedict XVI had attacked the modern pitting of faith against reason, noting that reason is located in the second Person of the Trinity, who is the *Logos*, in whom "the archetypes of the world's order are contained." His vision was one in which human existence is fundamentally 'liturgical.' He noted that, for the Pythagoreans, the mathematical order of the universe was identical with the essence of beauty itself. This was not only an optical but a musical beauty. The mathematics of the universe comes from the mind of the Creator, from the *Logos*, in whom the archetypes of the world's order are contained. In virtue of his work in creation, the *Logos* is called the "art" of God (*ars = techne*). The *Logos* is the great artist in whom all works of art have their origin.

Western civilization has long ago lost its sense that cosmic order has to be rooted in a "*Logos*." The following chapters are about the search for beauty in art, science, and the cosmos - in short, the search for the *Logos*. This is partially a matter of retrieval, but not entirely so.

Caldecott says that his book is comprised of the following main points: First, the way we educate is the way we pass on or transform our culture and modern education tends toward the fragmentation into disciplines and the elimination of meaning, except as something we impose by our wills. Second, the keys to meaning are form, *gestalt*, beauty, interiority, relationship, radiance, and purpose. An education for meaning should begin with an education in the perception of form. Third, "education begins in the family and ends in the Trinity. Praise (of beauty), service (of goodness), and contemplation (of truth) are essential to the full expression of our humanity. The cosmos is liturgical by its very nature."

Q1: What does Caldecott mean when he says that the cosmos is liturgical?

Q2: What does he mean by the "Pythagorean spirit"?

Chapter 1

We live in a time when we are "distracted from distraction by distraction" (T. S. Eliot) and where many suffer the condition that Jane Austen had remarked about with respect to one of her characters: "she had no resources for solitude." Chesterton had observed, "People are inundated, blinded, deafened, and mentally paralyzed by a flood of vulgar and tasteless externals, leaving them no time for leisure, thought, or creation from within themselves."

Originally, there was a kind of separation and a hierarchy that was understood in the idea of the Liberal Arts which stood at the origin of the idea of university education in the West. The liberal arts were meant to prepare the student for the higher study of philosophy and theology, through which we become truly free and fully human. They are to be contrasted with the practical and economic arts, deemed the "Servile Arts," (which Caldecott assures us was not a term of contempt at that time). Now, everything has been leveled, there is no preparation for higher studies, and the higher studies are basically absent except in name only.

University education is usually traced back to Socrates who instilled in his disciples certain principles. Namely, the nature and calling of the human being is to know truth, being, wisdom, goodness, and virtue - the forms or the highest causes. Through knowledge we transcend our limitations to become identified with the truth that is our highest and deepest ground. Knowledge can only be attained through the disciplining of thought by logic and of will by virtue.

The power of learning exists in the soul. The instrument of knowledge can only be turned or moved by the movement of the whole soul from the world of becoming toward the world of being, wherein to learn by degrees to endure beholding the brightest and the best of being, the good. Socrates explored how to move the soul as a whole. He proposed as key disciplines: arithmetics, plane and solid geometry, astronomy, and the study of harmony. He distinguished between a lower, practical use of disciplines and a higher function: the purpose of finding "the beautiful and the good" - seeing through the patterns of the numbers or the stars to the eternal realities that can be revealed to the inner eye of the mind. When the intercommunion and connection of these studies is apprehended, only then are they of profit for the higher aim of philosophy.

The "circle of learning," the disciplines by which Plato believed the inner vision of the soul could be awakened, was systematized into nine fields of study by Varro, and then further systematized by Augustine, Boethius, and Cassiodorus into the trivium (grammar, rhetoric, dialectic) and the quadrivium (arithmetic, geometry, astronomy, and music). These later go back to the Pythagoreans, who had originally grouped these together. Dorothy Sayers eloquently argued for the trivium but slighted the quadrivium. Caldecott argues that the quadrivium is essential to liberal education in the traditional sense as well.

Aimed at in the trivium and quadrivium is a higher-order utility than that of the Servile Arts, since it involves the acquisition of skills that liberate the learner from further dependence on a teacher, leading by stages to philosophic wisdom, and meditation on what is revealed in holy scripture, as the highest end of man.

The four faculties in a medieval university around 1400 were Theology or Divinity, Law, Medicine, and Arts or Philosophy.

The potential of the Liberal Arts for intellectual and spiritual integration failed for the most part to be manifested in medieval times, except in a few great thinkers such as Aquinas and Bonaventure, and in the great cathedrals such as Chartres, Amiens, and Notre Dame and in the liturgies that they were designed to serve.

Christopher Dawson in *The Crisis of Western Education* argued that a simple revival of the quadrivium was not enough to make young people aware of the spiritual unity out of which the separate activities of our civilization have arisen. He proposed teaching culture historically, using the literature of medieval Europe rather than the classical sources that the medievals had used. Every subject has a history, a drama, and by imaginatively engaging with these stories, we become part of the tradition. The secular mind-set which undermines comprehension of the cosmological assumptions of the quadrivium must be confronted. The purpose of an education is to teach the ability to think, discriminate, speak, and write, and the ability to perceive the inner, connecting principles, the intrinsic relations, the *logoi* of creation, which the ancient Christian Pythagorean tradition understood in terms of number and cosmic harmony.

John Henry Newman defended the tradition of the Liberal Arts education and the principle that knowledge is its own end and is not to be valued for the power it gives over nature, or even the moral improvement it may bring about in us. It is to be valued for its beauty. By Newman's time, under the conditions of the Enlightenment, the earlier elevation of theological wisdom to the position of being the end and goal of a liberal education has resulted in a separation of theology from the rest of the curriculum.

"Beauty is the radiance of the truth and the good, and it is what attracts us to both." It is one of the transcendental properties of being, properties found in everything that exists. According to Socrates, the object of education is to teach us to love what is objectively beautiful. Caldecott quotes at length the physicist David Bohm who, against the notion that beauty is purely a subjective response, observes the correspondence of the feeling of the beauty of a theory to the degree to which it is ordered, coherent, and harmonious with all parts generated naturally from simple principles, etc. He notes that these properties are necessary not only for the beauty of a theory, but also for its truth. Hans Urs von Balthasar notes that there is a kind of vengeance exacted for the suppression and the separation of beauty from goodness and truth. "Prayer can only motivate by a love that reveals the beauty we long for, denial of which cuts at its root the ability to pray."

The cross is the image of ultimate realism about the world and the way it works. In it we see a divine act that takes the matter of history and prophecy and weaves it into a new design which transforms the way we view the world. Caldecott quotes David Bentley Hart who remarks that the Christian God is infinitely "Formosus, the supereminent fullness of all form, transcendently determinate, always possessed of his Logos....because he is beautiful, being abounds with difference: shape, variety, manifold relation." True love is always turned away from itself, pouring itself out for others, and this makes it open and radiant, and creates room in the Trinity for the creation itself, as well as for all the suffering and all the sacrifice that creation involves.

Chapter 2

For the Platonic and Aristotelian tradition, the choral art was the foundation of the educational process.

"All of the educational experiences detailed in *The Republic* for the child - songs, poetry, music, gymnastics - are meant to awaken and refine sympathetic knowledge of the reality of the True, the Good, and the Beautiful, by placing the child inside the experience of those transcendentals as they are contained in these arts and sensory experiences." Rhythm, harmony, and melody should be made to penetrate deeply into mind and soul from the earliest age through imitation and natural enjoyment. This prepares the soul later to become fully rational and to derive pleasure from the theoretic contemplation of ideas.

As the Roman Empire collapsed and the barbarians swept across Europe, the monasteries of St. Benedict formed a chain of sanctuaries, where civilization itself was preserved and reforged in the fires of liturgy. The Benedictine communities instantiated the ancient idea of a "musical" education: an ordered life, proportionate, harmonious, disciplined, and joyful. Beauty flows from beauty and from these oases of the spirit flowed art in profusion: music, architecture, painting. The Benedictines lived intensely, as well as remotely, and as a result they drew civilization toward them. The liturgy developed their feeling for beauty and their asceticism forbade the pleasures of the senses so they delighted in beautiful language and poetry. Their desires were for the joys of the spirit and they neglected none that the pagan literature and philosophy had to offer.

"Beauty is unable to bypass the senses (and this is the reason we can never afford to despise sensual delight), but the function of our senses is to enable beauty to penetrate within, to become that to which the heart of our mind can give assent," writes the Benedictine Denis Huerre OSB. Huerre discussed how beginning with Origen a literature grew up devoted to the "spiritual senses," which is a way of speaking about how we are penetrated by beauty, what it is to encounter beauty, and how it is that that which beauty engages must be the whole of what we are. Caldecott remarks that Thomas Aquinas, though he later became a Dominican, owed much to his early participation in Benedictine Latin chant of the *schola cantorum*, "the musical education that opened his consciousness to the harmonies of the spirit."

The modern period has undergone a concerted attack on our confidence in the human capacity to know. Without a spiritual foundation, the machine stops. The Romantic movement was an expression of "the mysterious vengeance" of beauty separated from goodness and truth by the assumptions of a narrower rationality." The Romantics sought beauty in the world of the imagination through poetry, images, music, feeling, and story. Romanticism fell into solipsism by a reliance on feeling alone to bridge the divide between self and object, but J.W. von Goethe and S.T. Coleridge pointed toward a more promising road than this collapse into self.

Coleridge wrote, "The primary Imagination I hold to be the living power and prime agent of all human perception, and as a repetition in the finite mind of the eternal act of creation in the infinite I AM." In modern times we have neglected the poetic or musical dimension that was presupposed in the Liberal Arts as originally practiced, and infused into the Middle Ages by the Benedictines - the need to educate the heart and the imagination, not just to feel but to know. Poetic knowledge is an inward or intuitive grasp of the world. It is emotional, sensory, and empathetic and it involves the whole person in the act of knowing. It is knowledge by "connaturality" or participation which finds within the self something which corresponds to the object. Poetic intuition does not grasp merely the singular "existent which resounds in the subjectivity of the poet," but "all the other realities which echo in this existent, which it conveys in the manner of a sign." It is perception by "the integrated powers of the soul."

While acknowledging the importance and even primacy of poetic or musical learning, this must not be done in a way which slights or displaces empiricism from its proper stature. Rather, we need a vision like C.S. Lewis's of a regenerate science which, when it explained, would not explain away, and when it spoke of the parts, would remember the whole. While studying the It, it would not lose the Thou. Caldecott suggests that the opposition between the "cultures" of science and the arts can be overcome by teaching science and mathematics at least partly according to the poetic mode. This requires that the poetic imagination be first awakened. He counsels beginning with the senses and the discovery and cultivation of harmony and beauty in the soul by way of the sense's natural affinity for the harmonious, the proportionate, and the beautiful in nature and the arts. Also, he counsels teaching mathematics historically.

Caldecott will go into greater depth in the next two chapters about the potential reintegration of science with the poetic mode of knowledge, but first he wishes to lay the ground work of his discussion by reflecting on the nature of symbolism. The poetic imagination depends largely on the interplay of likeness and difference. The imaginative appreciation of similarity and correspondence lies at the root of language itself. A symbol is something that, by virtue of its analogous properties, or something else, represents something else. It is not just a sign, which is made to correspond to something by an arbitrary convention, but has some natural resemblance to what it signifies. Reading the symbol is a way of passing from the visible to the invisible. The Romantic period developed its particular concept of symbol as providing a form of language in which something otherwise beyond our reach can become visible. The symbol allows what is expressed in it to enter our world and is the locus of the manifestation of what would otherwise remain invisible.

To take symbolism seriously is to accept the 'analogy of being between different levels of reality.' If the world is the effect of the Divine Word uttered at the beginning of time, then all nature can be taken as a symbol of a supernatural reality. The traditional view of the world is that it is intrinsically symbolic and the harmony of the world reflects the Divine Unity.

A poetic consciousness is necessary to "see" the archetype in the symbol. Caldecott encourages the development of the symbolic sensitivity as well as safeguards against its excesses such as superstitious obsession with magical correspondences or fascination with the occult. Though symbolic sensitivity has its pitfalls, so does a "prosaic" consciousness, which easily falls into brutality and hedonism. Modern science has discovered many natural wonders but we have lost the ability to relate these to spiritual truth. Caldecott lists a few books which might help to recover this sensitivity to symbol. Of natural symbols, the richest and most eloquent is man himself, made "in the image of God" and an image of an order, cosmos, or microcosm. Man is a natural mediator and vice-regent of the Creator because of his position in between the material and the angelic world. In Christ's hypostatic union of divine and human natures, grace and the source of grace are now within the creation as well as outside of it. When Western thought lost a sense of the intimate relationship of the natural with the supernatural, it lost even the poetic 'pagan' sensitivity to natural symbolism that Christianity had integrated and transformed. Our task is to recover both.

Chapter 3

The quadrivium - arithmetic, music, geometry and astronomy - had a common base in mathematics. The assumption of this system of education was that, by learning to understand the harmonies of the cosmos, our minds would be raised toward God to find the unity from which all these harmonies

derive, the "love that moves the sun and the other stars."

The idea that the cosmos is built on mathematical harmonies and that numbers can be a path to God flowed from Pythagoras and Plato into the Middle Ages, where it influenced the cathedral builders and later the artists of the Italian Renaissance. It was also one of the essential factors in the birth of science.

Caldecott cites Werner Heisenberg, Paul Dirac, and Heinrich Hertz as examples of great modern scientists who found in the mathematical correspondences confirmation of Pythagoras and Plato's notion that there are signals of the transcendent in mathematics. [In John Newton's autobiography, I found it interesting that during his lowest time of immorality in his debauches with slaves, he still read compulsively over and over again Euclid's *Elements*. I imagine that God used this in part to eventually help raise him from the depths of moral torpor to become a faithful servant to Him].

Michael Schneider notes that numbers are a map of the beautiful order of the universe, the plan by which the Architect has transformed undifferentiated Chaos into an orderly Cosmos. He notes that cultures did not necessarily learn this from one another, but had only to look at numbers and their relationships to see how they revealed harmonious models which are the same everywhere at all times. Our present education tends to eliminate the contemplative dimension of mathematics by which we grasp the relationships of numbers, reducing mathematics to sheer quantity. Caldecott believes that this reduction of mathematics is largely behind the divorce of science and religion and art from science, and he states his intent to seeking to immerse the reader into a different vision of mathematics.

Numbers have a mysterious nature, representing the thought of God. Even a materialist must regard numbers as a part of 'reality' while puzzling over the fact that they are made neither of matter nor of energy. The multifaceted nature of number becomes more clear when one transposes each number into its corresponding geometrical form: three into a triangle, four into a square, etc. In each figure many relationships appear which multifariously throw light on the inner law proper to the figure in question. Caldecott walks the reader through numbers 1-12 with a discussion of the geometric patterns they create, peculiar laws operative with each of them, and their symbolic resonance and also their Scriptural and historical symbolism. For an example of a law that is operative with a number, the number six is called a "perfect" number because it is the sum as well as the product of its divisors one, two, and three. Caldecott also notes that relation of the numbers to the musical scale. For example, with the number eight, the eighth note, the octave, marks a completion of the scale, a repetition of the keynote, and signals a movement to a new level.

The introduction of the number zero was an innovation from India that was introduced by Arabs into medieval Europe which radically simplified the process of calculation. Some writers on number symbolism regard it as an interloper which led to a loss of the awareness of the symbolic properties of numbers and especially of Unity. Caldecott is not convinced by the detractors of the number zero. He notes that that zero can be taken as the ground of being and as a symbol for the return to one. He remarks that perhaps the mistake lay not in introducing zero, but failing to read it symbolically.

Irrational numbers cannot be used to count things but they are encountered in the relations between things that can be counted. Like all irrational numbers, when expressed as a decimal, Pi goes on forever. Irrationals were the result of using discontinuous spatial or qualitative numerals to describe continuous spatial or qualitative relationships. The Greeks did their mathematics pictorially and the indefinable quantities were hence easy to find geometrically in two or three dimensions. A higher-order

mathematics such as that developed by Eudoxus and rediscovered in the modern period incorporated the irrationals without difficulty though at first, according to legend, their discovery was a scandal and a trial of faith to the Pythagoreans.

There is beauty to the irrationals. A rectangle for example is "golden" when the ratio between the sides is phi. If you cut a square out of the golden rectangle, the remaining piece is also a golden rectangle. Both Leonardo da Vinci and Piet Mondrian used such rectangles frequently in their paintings, and the ratio itself can be found governing the lengths of sections in many Beethoven movements. Phi is called "Divine" because, like God, it contains within itself identity and difference. Meditating on phi is thought to be a way of raising the human mind toward the divine unity.

Phi is "the perfect division of unity....since no term of the original division steps...outside of a direct rapport with the initial division of Unity." As a proportion, not strictly a number, phi can be taken to represent the experience of knowledge, or mediation, and of analogy and the Logos in all things. Fibonacci's book, *Liber Abaci* or "Book of Computation," persuaded Europe to adopt Arabic numerals after 1202 AD. The Fibonacci sequence approximates to phi. The "golden spiral" in which each turn follows the Fibonacci sequence, where each consecutive set of two numbers added together produces the next, is a pattern which seems to recur in galaxies, whirlpools, shells, and plants. It has often been claimed that the "golden" proportion is one of the defining characteristics of objective beauty.

Symmetry, or "patterned self-similarity," has always been treated as one of the fundamental principles of beauty. Transcending the division between rational and irrational, the idea of symmetry can be applied to numbers, shapes, music, words, and ideas. The universe as a whole is highly symmetrical, and it seems it was even more so going back to the Big Bang. The physical distribution of matter and energy, the laws of conservation of energy and momentum, and even the invariance of physical laws across time and space, are all now seen as manifestations of the same principle.

Symmetry requires all parts of a pattern to be present, and is therefore a unifying principle. All the four basic forces of nature (gravity, electromagnetism, the strong force, and the weak force) are based on and controlled by principles of symmetry.

A mandala is any symbol of wholeness exhibiting a variety of intensive symmetries, in which each part communicates with and corresponds with every other. It could be argued that arithmetic, geometry, astronomy, and music originated in the quest for the ultimate mandala. The mandala illustrates one of the most important aspects of beauty: the convergence of extreme unity with extreme complexity.

[Several places in this chapter and in an earlier chapter, Caldecott refers readers to the following book: Michael S. Schneider's *A Beginner's Guide to Constructing the Universe: The Mathematical Archetypes of Nature, Art, and Science A Voyage from 1 to 10*]

Chapter 4

Caldecott observes that, in modern ways of thinking, mathematics and theology are completely disassociated from each other, as if in two separate worlds. He stresses the need to bridge that gap, reviving a "Christian Pythagorean-Socratic" tradition. We need to attune our minds not just to the infinite but to the infinite Three-in-One. "Two is the number that separates, Three the number that transcends all separation."

The threefoldness of God is not the threeness of three objects that can be placed side by side and counted. Threefoldness in the world points toward divine triunity but does not reach that far. Examples of images or shadows of the divine triunity in the world include the three dimensions and the three grammatical persons (I, you, and he). Following Augustine, St. Thomas argues that every creature bears a trace of the Trinity in being created as an individual, having a form, and being related to other things.

"Numbers have meaning- they are symbols. The symbolism is not always projected onto them by us; much of it is inherent in their nature" (p. 75). $1 \times 1 / 1$ is a kind of arithmetical "icon" of the Trinity. Caldecott says that, once you start looking, you can see pointers to the Trinity everywhere because Three-in-One is actually more fundamental to existence even than One, for Oneness has no real place for multiplicity, while Trinity does. "One of the 99 Beautiful Names of God in Islam is al-Wadud, The Loving. Allah loves his creatures, and is loved by them. But there is all the difference in the world between a God who is loving but needs the creation in order to have an object for his love, and a God who is in himself love (1 John 4:8)...Something has been revealed by Christ that is not revealed explicitly in Islam, namely the interior life of God."

Theologians's attempts to describe the Trinity are attempts to describe a dynamic but trans-temporal Act "I AM" that is the highest essence and source of both Being and Love. "The Father and the Son 'spirate' the Spirit of love consubstantial with them" (Pope John Paul II). The whole divine life is Love given eternally. This love lives only in the interchange by which everything flows from the Father through the Son and flows back to him in the Spirit (Louis Bouyer). "The Spirit proceeds from the Father neither in general, nor because of some metaphysical necessity, but as the hypostatic movement of love" (Sergei Bulgakov). There is an eternal circular movement of the Spirit from the Father by the Son. "The Tri-unity has two poles, the Father and the Son, and the eternal movement goes from one to the other: the Spirit is this movement which encompasses and unites them" (Francois-Xavier Durrwell). The attempts by theologians to describe the Christian Trinity urge a movement from the realm of number to the realm of shape in order to conceptualize what is to be described. Mathematics begins with measurement as well as counting. Measurement involves both counting and comparison. Geometry is more than counting, having to do with a world of more than one dimension, a world with shape and form.

A triangular representation of the Trinity has the weakness of omitting any indication of an essential difference between the Son and the Spirit. A circle with a straight line is a more sophisticated geometrical symbol because it captures the difference between the Persons, the fact that the Son is "generated" but the Spirit simply "proceeds." The Holy Spirit joins the Father and the Son together. The Father is stillness, represented by the point, the Son is linear motion from the Father. The Holy Spirit is circular motion.

Simone Weil was adept at translating theology into geometry. She more than any, according to Caldecott, recognized that Pythagorean geometry is marked deeply by the Trinity. Weil noted that, for the Pythagoreans, harmony is based on a geometrical mean. If two elements are ratios that share a common term, they can be fitted together. An example is 'a grandfather is to a father what a father is to his son.' Christ is the proportional mean between God and the saints (p. 81). To Weil, Greek geometry seemed like "the most dazzling of all the prophecies which foretold Christ." Caldecott cites her biographer, recommending reading Weil as a way to assess the depth of our own conception of the cosmos because she departs from the currently common conception.

The gulf between the absolute otherness of people is spanned with the help of a Third Person, the Spirit of love. Weil writes, "God is essentially mediation. God is the unique principle of harmony. That is why song is appropriate for his praise." [This reminds me of 1 John where the apostle writes, "God is love"] She writes that the universe in which we are living as a minute particle is "the distance put by divine love between God and God" (p. 83). Weil reads into the interplay between circular and linear motion in the circle and its diameter nothing less than the meaning of the incarnation. For Weil, the circle expresses the infinite motion of God (the heavens), and the straight line down the middle expresses the world of creation (the earth), then the line linking the circle's perimeter with the diameter at a right angle, the geometric mean, is the world's Mediator, Christ, the incarnate Logos.

Caldecott extends Weil's idea using Thale's triangle, in which the diameter of the circle projects to the perimeter and a perpendicular is dropped from there back to the diameter, by adding another such triangle in the other half of the circle. With the right lengths, the rectangle is a "golden rectangle," thereby making the circle "golden" in which it occurs. The golden circle is a beautiful synthesis of straight and circular motion, of phi and pi. Pi is like the gateway between the domain of straight lines and the domain of circularity. Pi is the irrational number by which the diameter of any circle must be multiplied to find its exact circumference. Pi and Phi are connected together by the fact that the golden rectangle's diagonal forms the diameter of the circle.

The point from which the circle begins is the Father. The line that extends from the point to make the radius or diameter represents the Son, and the circle made by swinging the radius around represents the Holy Spirit. The endless flowing numbers of pi suggest the super-abundance of God's mercy, the infinite quality of his love, and the unlimited space opened up within the Trinity for the act of creation. "True pi reaches for the infinite and never fully engages with things mundane and rational... When the divine Architect separated Heaven and Earth it was permanent" (pg. 86, quoting Schneider)

What do you think of Caldecott's assertion that numbers are symbols and the symbolism is not always merely projected onto them by us? (See p. 75).

What do you think of Louis Bouyer's attempt to overcome the dispute between Catholic and Orthodox traditions concerning the *filioque* in his quote on p. 77?

What do you think of Sergei Bulgakov's answer to the *filioque* controversy? (See p. 78)

Do you agree with Simone Weil when she says that the universe in which we are living as a minute particle is "the distance put by divine love between God and God"? (See p. 83)

Chapter 5

Caldecott suggests that mathematics is inherently theological and mystical. Simone Weil had asserted that a mystical conception of mathematics supplied the necessary degree of attention in the early stages of geometry. Mathematics is a liberal art, not a servile art, so it is not to be justified merely in terms of an immediate practical purpose. At the height of culture is leisure, not work, and at its highest, leisure is contemplation, an activity which is its own justification. The purpose of the quadrivium was to lead toward contemplation of God in an orderly way. The purpose of the trivium was to prepare for the quadrivium. They were spiritual disciplines, in a sense, meant to purify the soul for prayer. It is the contemplative dimension that connects us with the source of inspiration and beauty in the cosmos and

our own souls.

Every material object has at least one "natural frequency" and often several. These frequencies are called "natural harmonics." The ear drum resonates in sympathy with the vibration of a guitar string communicated through the air in sound waves. Harmony, the perceived concord between different frequencies, was first analyzed by Pythagoras. The lowest note or pitch produced by an instrument or hammer or column of air is called its fundamental frequency, or "first harmonic." Its wave length is exactly twice the length of the string. Differences in pitch are called intervals or octaves. There are seven intervals. Notes in whole-number ratios to each other sound good together. Sounds made by notes that harmonize together turn out to be visually, as well as audibly, beautiful. For Pythagoreans, the whole universe was composed of a single octave between 1 and 2, and thus the musical scale was a model of the cosmos.

In the 12th Century, at the cathedral of Notre Dame in Paris, plainchant became polyphonic, expressing the genius of Gothic architecture in sound. As partly music that was developed to transmit the new harmonies reached a new level of complexity, the question of timing became more important. Soon measured rhythm and new conceptions of musical form were introduced. In the 16th Century, the octave was divided into twelve exactly equal parts called the chromatic scale. Some say that the most beautiful interval is the major sixth (8:5) which is a close aural approximation to the golden ratio ($8/5=1.6$).

Among the Greeks "the art of the muses" encompassed the whole of intellectual and literary culture and included dance, poetry, singing, and the playing of instruments. Polyphony complemented this broader understanding of music. It was assumed that to understand the universe was to appreciate its music, the harmonies between its parts, the rhythm of its movement, and the proportion of its elements. This goes back to Ptolemy's *Harmonics* and Pythagoras before him. The music between the body and the soul is that natural friendship by which the soul is leagued with the body in certain sympathetic relationships for the purpose of imparting motion and sensation to the body. Hugh of St. Victor attempted to relate different types of music to the different levels of the human organism. Recent research suggests that human beings may be unique among animals in having a sense of rhythm and being able to synchronize their movements with an auditory beat.

There is a close connection between light and sounds. Haydn linked each instrument in the orchestra to a distinct color and Messiaen attempted musically to evoke the "perpetual dazzlement" of heaven and the New Jerusalem that he glimpsed through the stained glass of St. Chapelle. John Tavener believed that all music already exists and one just had to have ears to hear it. He believed the fact that modernism could envisage no source was a very grave and catastrophic state of affairs. He stressed our need to learn from chant, as "music is the extension of the Word, not a frilly decoration of the Word."

For Hugh of St. Victor, the ultimate concern of music and all of the arts "is with the changeless archetypal patterns in the divine Wisdom, to whose likeness the arts restore man." The conditions making modernist architecture mechanistic, inhuman, and ugly are rooted in a philosophy of life that architects have absorbed and perpetuated along with everyone else. The vertical dimension has been devalued and the link between the horizontal and the vertical had disintegrated. There is a natural cosmic symbolism associating the vertical with the spirit and the horizontal with matter. Many of the classical traditions based on symmetry and the proportions of the human body were codified by Vitruvius in the first century BC. With the rise of rationalism in modern times, the vertical or transcendent dimension was neglected as we concentrated on mastering the world around us.

Traditional materials such as wood, stone, or clay speak an immediate connection with the earth. On the other hand, concrete and cement by their very nature represent the brutality of modernism - the

reduction of the world to particles in order to force it into shapes of our own devising. Modernism is "a place where too many obvious features express the desire to control and manipulate, to herd and standardize." One of the aims of the European Enlightenment was "mathesis," or the spatializing of all knowledge, mapping the world onto a notional grid in order more easily to measure and control it. Moderns attempted to substitute for the concept of eternity the concept of space, and they attempted to achieve in time with frenetic activity or movement in space what can only be attained through contemplation. The nominalists tried to locate meaning and order in the subjective realm rather than in the objective. Without the mediation of a world-order that is rooted in divine wisdom, the order of intelligibility has had to be imposed on nature by the human mind.

Prince Charles has identified ten principles for good architecture, including that a building should be sensitive to location and setting, that it should lead the eye to its most important elements, that it should harmonize with its surroundings and with the guidance by the community that will have to live in the building that you are designing.

Michael Rose notes that the massing of volumes upwards in a building most readily creates an atmosphere of transcendence. Caldecott adds that what is essential is the natural symbolism of the vertical, and the vertical should add something qualitative, not merely quantitative. Permanence and the transcendence of time by eternity is expressed or suggested by the stability and the durability of the church. The third law of church architecture is Iconography, or the ability of the building to convey meaning not only by its overall form but by the details of its composition and adornment. Often style manifests theology.

Abbot Suger, the 12th Century inventor of the Gothic, attempted to incarnate the vision of the New Jerusalem in Revelation chapter 23. "It was a microcosmic model of the universe, as befitted the body of God." Its ordering principles included Pythagorean and Euclidean mathematics that Suger inherited from the ancient Greeks by way of Boethius and the Arabs. The Gothic churches of Suger exemplified integrity, radiance, and proportion, three elements of beauty as defined later by St. Thomas. Integrity here refers to the kind of perfection a thing has when it has all it needs to be itself to perform its authentic function.

Medieval architects tended to build on geometrical principles whereas Renaissance architects preferred arithmetical principles. Also, the Gothic floor plan echoed the form of Christ's human body on the Cross, and the distance between heaven and earth was expressed in vertical elongation, whereas the Renaissance, influenced by the Greek Cross of Byzantium, preferred the circular form as though peering directly at divine perfection. Caldecott names a few modern architects which he believes are examples of how we are beginning to appreciate again the importance of formal beauty.

Ecologists in the second half of the twentieth century have revealed the interdependence of all living things in a world that is more than a mechanism. This was but the rediscovery in scientific terms of what had already been understood "poetically" in all previous civilizations. Early church fathers understood that Adam's role in the cosmos was a priestly and a mediatory one from the beginning, and that Christ restored that role by assuming the whole of nature by taking on a human body. The fundamental human act is prayer, which is the remembrance and invocation of God. It is through this that heaven and earth are linked together. One implication is that the disorder in the macrocosm is our fault, being a reflection or a projection of our interior dis-ease. The whole creation was put out of joint when Adam fell. There is no adequate moral theory based on rights alone that addresses the need to conserve natural resources and biodiversity. It is more compelling for the average person to think in terms of the need to act virtuously. By putting emphasis back on our own integrity and on the cardinal

virtues of prudence, justice, temperance, and fortitude, we are laying the foundation for a way of life that would be truly sustainable over time.

Although we should not romanticize the past, there is an objective difference between a way of life that is limited in the damage that it can inflict on creation, and a way of life that is founded on the unlimited aspiration to consume and to enjoy.

"The problem with the traditional method of relating everything to the simple mathematical archetypes of Pythagorean numerology and harmony is that if you start with the archetypes and try to deduce the forms and movements of the universe you will almost certainly go wrong-and you will end up having to bend the facts to reconcile them with your empirical observations." (p. 111) Kepler's breakthrough from the contemplative to the practical question of why was because he had more respect for the physical world as God's creation and as the image of God's mind. Kepler was led astray by pure deduction from an aesthetic ideal and he resisted the findings of more accurate measurement, calling the discovery that the orbits of the planets were ellipses rather than circles a "load of dung" in the heavens. However, if we contemplate the result of the observation, unexpected beauty reveals itself. Kepler's error was not in his Christian Pythagoreanism but in his attempt to prejudge the mathematical forms he would find in nature.

Everywhere we look at nature, we tend to find structure or form within it. The planets occupy distinct orbits and rotate in close numerical relation to each other. All these distinct forms we observe in the universe indicate what Pope Benedict calls the 'inner design of its fabric.' Music, architecture, astronomy, and physics demonstrate the fundamental intuition behind the Liberal Arts tradition of education to the effect that the world is an ordered whole, a "cosmos," whose beauty becomes more apparent the more carefully and deeply we study it. There is an intuition that the truth is beautiful and that a successful description of nature should be a concise, elegant, and a unified mathematical structure that is consistent with experience.

Cosmology leads only to the threshold of theology.

Questions:

What do you think of John Tavener's assertion that "music is the extension of the Word, not a frilly decoration of the Word", that it is a grave problem that modernism can envision no source, and that we need to learn from chant? (pp. 96-97)

What do you think of Prince Charles's ten principles for good architecture on pp. 100-101?

How important do you think the natural symbolism of the vertical, and its absence, is in people's daily lives?

What does Caldecott mean by "formal beauty"? (p. 105)

Chapter 6

The modern era is shaped by its overthrow or displacement of ancient metaphysics. The outlook overthrown, known as "realism," was based on the sense that ideas such as justice and beauty, and also cat and five, possess a reality of their own which is distinct from the individuals or acts that they qualify. This view was displaced by philosophical "nominalism" which held that the world consists only of particular individual things to which we attach labels to describe them. Another sense of

"realism" is that the real world is ontologically independent of our own thoughts and our experience of it. This survived the assault of "nominalism" but then was attacked again by the idealism of Kant and Hegel. The Heisenberg principle is challenged by "realist" interpretations of the same experimental observations. (When Rod Dreher devotes a chapter in *The Benedict Option* to the genealogy of modern disorder, he similarly starts with "nominalism")

Writers like Louis Dupre, Robert Barron, Charles Taylor, and Catherine Pickstock confirm that nominalism lies behind secular modernity. These authors all tell the same story of a philosophical shift that was characterized by a changing sense of the self and the self's relation to society. This sea change was the beginning of modern individualism and the subjective turn that led to a "buffered self" living within a "disenchanted world." The modern person feels himself disengaged from the world around him rather than intrinsically related to it (and increasingly he is disengaged from his body, tattooing it and disengaging from his biological sexual nature). He is expected to forge his own nature by an exercise of choice.

With no hierarchy of ordered forms to draw upon since the existence of such forms has been denied by nominalism, God's rule over the universe became conceived of as arbitrary or whimsical. The concept of efficient causality absorbed that of formal causality, and all divine and human actions had then to be justified as "efficient," part of a process of exchange for anticipated benefits.

Within the nominalist framework, the only Forms are those we invent, so the social and political order has to be created by an imposition of the will. First there was God, then the divinely appointed king, then representative democracy. The Reformation emphasized the individual conscience and pared away the fabric of traditions and "sacramentals." Without the embeddedness of the self through these things within the social cosmos, nature was drained of grace and our connection to God became a matter of sheer willpower. *How can we combat the negative effects of individualism without losing the benefits of self-consciousness and rationality?*

Caldecott says that the key lies in revelation and worship. "What defines secularism more than anything is an inability to pray, and the modern world in its worst aspect is a systematic assault on the very idea of worship, an idea that begins with the acknowledgment of a Transcendent that reveals itself in the Immanent." Once we lose the sense of objective beauty and the Forms in the fabric of the world, eventually the ability to pray goes too.

Human civilization has always been built around an act of worship, a public liturgy. If we are to renew our civilization by renewing our worship, we must have a broader understanding of liturgy as being in tune with the stars, the dance of atomic particles, and the harmony of the heavens that resembles a great song. Catholic liturgy takes the practitioner even deeper to the source of the cosmos itself, the sacred precincts of the Holy Trinity, the Beginning and the End, the source of all culture.

We should take our cue for harmonizing our liturgical activity from the cosmos. Liturgy is the "lost key" to humane education, the reintegration of all things and subjects in a vision of sacred order.

The fundamental religious experience is an encounter with the awe-inspiring mystery, the "wholly other," numinous divine power. Some societies encourage this experience more than others. A sacred object is something that, while belonging to the perceptible world, is set apart in order to manifest something of a wholly different order. Traditional or religious man lives in a world that is permeated and determined by a sense of the sacred. For Christians, the structuring of time - the seven days of the week, the months of the year, the feast days, Easter and Christmas - serve as ways to reconnect us with the transcendent. Profane man possesses a philosophy which does not allow him to connect central experiences of life to some transcendent realm, and so to the origin of all things.

Mircea Eliade suggests that desacralized man is the result of a "second Fall" in which the memory of Eden is lost. A religious society orients itself toward God by having first a creation story, second an eschatology, and third a liturgy - a set of rituals and a way of organizing time and space which situates us in relation to the beginning and the end.

Prior to everything else we do, we exist, and liturgy begins by acknowledging that fact with gratitude. Liturgy therefore starts with remembrance. The elemental courtesies of conventional etiquette and good manners are vital channels for preserving the "substance of gratitude" in everyday life. An education that actively cultivates such modes of behavior will begin the process of building a society that is liturgical to its very core.

The liturgy is the ultimate school of thanks. In it we renew sacrifices of thanksgiving continually in the rhythms of sacred time and our gifts are taken up into the sacrifice of Christ on the Cross. We should be able to experience in the Mass or Sunday worship all the threads of our education being brought together. If we do not, then something is wrong with our education or liturgy. Christopher Dawson counseled that we devise a new humanist education with an 'intelligible form' based around the historical study of Christian or Western culture in order to overcome the chaos and the elements of modern education which thwart education's culmination in worship. He says that we do not need an encyclopedic knowledge of all the products of Christian culture but a study of culture-process itself from its spiritual and theological roots, through its organic historical growth to its cultural fruits. Key to the vision Dawson would have us recapture is the notion of beauty as cosmic order, an order that is simultaneously aesthetic, harmonious, symbolic, mathematical, and sacramental.

The vision of the Church and of the liturgy is also a vision of the cosmos. The salvation of man entails the salvation and the transformation of the whole cosmic environment in which we live. "The human task is to build up the Liturgical City by turning our lives back into gift."

What do you think of the importance or lack thereof of nominalism to modern ways of thinking? Is it correct to say that modernity is living as an extension of this philosophy? (Did Abelard and Duns Scotus have any inkling of a denouement of nominalism in transgenderism?)

What do you think about Caldecott's remarks about the importance of conventional etiquette and good manners (p. 130)?

What do you think of Caldecott's remark that what defines secularism more than anything else is an inability to pray?

Conclusion

Charles Taylor counsels that we should overcome the dualism for which "modernity" and "Christendom" are stark alternatives. Creative renewal will only come by a creative re-application of the spirit of the tradition. We cannot step outside of history and many of history's forward movements. However, great creative leaps often involve retrievals of insights and ideas from the past (*ressourcement*). What we now need to retrieve is the hierarchy of the different levels of reality, a sense of the "analogy of being," which allows for an order of divine wisdom that is shaping the created order. This fundamental intuition of the Logos has never been disproven. On the contrary, most recent developments of science confirm it.

The Liberal Arts were intended to conduce to the freedom of men and women, and they were

developed and nourished by the Catholic Church, but not originated by them. The post-nominalist world has a very strange and a dangerous conception of freedom which distorts the way we think. The Christian conception of freedom is larger and fuller than the modern conception because it includes both the vertical and horizontal dimensions. The horizontal dimension encompasses the world we see directly, and the vertical allows for degrees of being and value, invisible realms, formal causality, and so on. In the traditional three-dimensional world, the self was encouraged to spiritually recollect itself together in a point, in order to attach itself to a vertical axis or spiritual path. The way upward involved an integration of the self primarily through prayer or the remembrance of God. Modernity rejects the existence of the vertical altogether. It provides us with the gravest flat-earth theory. The consequence is a fragmented and dissipated self.

The Church is in the business of liberating human freedom by making known the beauty of truth in its fullness. The relation between faith and reason is one of reciprocal illumination. We must overcome the self-imposed limitation of reason to the empirically verifiable. The distinction between discursive and contemplative intelligence, reason at the level of soul (*ratio*) and reason at the level of spirit (*intellectus*).

Caldecott thinks that the tripartite division of the human is a necessary concept because otherwise faith will appear entirely extrinsic to reason. At the heart of the concern in this book has been how to overcome the dualism of faith and reason. The divorce of faith and reason has led to the subordination of either faith to reason (in modernism, positivism, etc.) or of reason to faith (in the various forms of fideism and extreme biblical fundamentalism). Faith claims to stand beyond reason, to speak from the place that reason seeks, but it does not claim to understand what it knows, and it should not usurp the role of reason in that sense. The resolution lies neither in faith nor in reason but in love. Faith orients reason toward transcendence, so that reason remains open to a light from above.

Do you agree that central to our task regarding education is now a retrieval of the hierarchy of the different levels of reality and a sense of the "analogy of being"? Elaborate.