Gothic Cathedral as Theology and Literature

Mary E. Wilson

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Gothic Cathedral as Theology and Literature

by

Mary E. Wilson

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy Department of English College of Arts and Sciences University of South Florida

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Date of Approval:
February 27, 2009

Keywords: number symbolism, sacred geometry, light metaphysics, divine illumination, universal salvation

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Gothic Cathedral as Theology and Literature

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ABSTRACT

There is a tendency in modern times for life to be divided into strictly separated categories—our music is divided into bins at the record store according to sometimes arbitrary genre distinctions, courses offered by one university department often cannot be counted towards a degree in another department, and students from middle school through college are outraged when they learn that “spelling counts” in a history paper. These distinctions, which are second nature to us even in childhood, were not as numerous or as strict in the medieval European understanding of life. Even when there were systems of division, such as the classification of scholarly subjects according to the Trivium and Quadrivium, the classifications were seen as interconnected and were meant to be studied together. I don't believe we can hope to truly understand any aspect of medieval culture if we examine these aspects in isolation according to our own categories. My hope is to come to a greater understanding of some part of medieval culture by examining in combination two aspects of this culture that are not normally combined in modern study—sacred architecture and sacred literature.

I will explore correlations in the use of sacred geometry, number symbolism, light metaphysics, and optics in Gothic cathedral architecture and sacred literature of the same period. I will also explore the evolution of cathedral architecture from the Romanesque
model to the Gothic model in terms of correlations with an evolving approach to popular theology as reflected in the literature of the period. More specifically, I will look at the use of sacred geometry and number symbolism as a central element of sacred architecture regardless of style and period and the increasing importance of light metaphysics and optics in Gothic architecture as a reflection of a changing approach to popular theology culminating in such thirteenth and fourteenth century writings as those of Robert Grosseteste, Chaucer, and Dante, particularly his *Divine Comedy*, which present to a popular audience a complex theology which would previously have been reserved for a clerical audience.
Chapter 1

Introduction

The seeds of Gothic architecture, indeed all styles of sacred architecture, were planted with the first prehistoric development of words for *one* and *many*. This most basic counting system, initially grounded in concrete objects, gradually became more complex and abstract, as did the symbolism attached to the numbers (Hopper 3–32). Beginning in the late sixth century BCE, Pythagorean number theory linked numbers and their symbolic meanings to specific geometric shapes. Plato then cited three basic shapes—Pythagorean triangle, equilateral triangle, and square—as the building blocks of five regular polyhedra that are in turn the building blocks of the universe (Hopper 35). The three basic shapes also became the foundations of the *ad quadratum* and *ad triangulum* systems of architectural proportion that were documented as being in use into the sixteenth century (Orrell 69–70). Symbolic (and structurally sound) proportion remained important in all styles of sacred architecture, but Gothic architecture also placed great importance on the properties of light, which were explained by the science of optics.

Plato was also the author of the first known optical theories, contained in his *Timaeus* (c. 360 BCE). Later in the same century, Euclid was the first to use geometry to describe the mechanics of optics, positing the visual cone (Gilson 10–11). The theory of the visual cone was refined and expanded by Ptolemy (c. 90-168 CE), who also used geometry to refine Aristotle’s theories on the causality of the heavens (Gilson 163). In
the tenth chapter of Book One of the *Tetrabiblos*, Ptolemy theorized that the strength of
the influence any celestial body has over the earth and earth’s inhabitants is partly
dependent upon the angle at which the celestial body’s emanated power intersects the
surface of the earth, with the strength increasing as the angle approaches perpendicular.

Plato’s philosophy, including his optical theories, were reinterpreted by Plotinus
and his followers, creating a philosophy that has come to be known as neoplatonism.
This philosophy includes a metaphysical system based upon the principle of emanation
from the One to the *Nous*, from the *Nous* to the *Anima Mundi*, and from the *Anima Mundi*
to the corporeal world. Because the emanation of light from the sun is the most
accessible example of emanation, Plotinus made heavy use of light analogies (Lindberg,
“Genesis” 9–10; Gilson 176–77). Neoplatonic concepts were later incorporated into the
Christian theological writings of Augustine and the Pseudo-Dionysius, which preserved
and legitimized neoplatonism for later Christian scholars. Augustine explicitly made the
light of neoplatonic analogies God’s light and made God’s light the only means by which
humanity can achieve true understanding of the nature of the universe (Mendelson;
Miccoli 72). The Pseudo-Dionysius used the neoplatonic system of emanation to justify
a system of hierarchies ordering all creation, including a hierarchy of angels and the
hierarchy of the Church (Corrigan and Harrington). One effect of the Dionysian
hierarchy is to make angelic mediation necessary even in heaven for a human soul to
have any contact with God, a concept that would remain controversial for centuries
(Gilson 253–54).

From the ninth century to the twelfth century, most developments in the field of
optics took place in the writings of Arabic scholars, such as Alfarabi (c. 850–950), who
placed the science of optics within the quadrivium (Gilson 50; Eastwood 307), and
Avicenna (980-1037), who proposed the two forms of light—*lux* and *lumen*—that would become central to both theological and scientific discussions of light (Lindberg, “Genesis” 18; Gilson 25). In the second half of the twelfth century, as the Islamic world was gradually rejecting its own scientific pursuits as being too prone to blasphemy, translators from as far north as England were flocking to Spain and creating a flood of Latin translations of Greek and Arabic works, including many scientific treatises (d’Alverny 444–49). The influx of Arabic works and of classical works previously unknown in Europe triggered a renewal of interest in optics and the metaphysical qualities of light. One of the first expressions of this renewed interest was the design of the first Gothic church, the abbey church of St.-Denis.

A Greek manuscript of the Pseudo-Dionysius’s *Celestial Hierarchy* and a copy of the ninth century Latin translation by John Scottus Eriugena were kept at St.-Denis (Panofsky, “Introduction” 18; Moran). In the twelfth century a new Dionysian manuscript was taken to St.-Denis and part of it translated by one of the monks there (d’Alverny 433). When it became necessary in the twelfth century to repair and expand the abbey church, Abbot Suger (c. 1081-1151) oversaw its transformation into a light-filled Gothic church. Suger’s description of the rebuilding of St.-Denis echoes language from Eriugena’s translation of the *Celestial Hierarchy* (Suger 50–51; Panofsky, “Introduction” 23). As Gothic architecture developed and spread through Europe, there were many variations of the style, and each region imposed its own aesthetic and functional preferences, but certain goals remained constant: increasing interior height, increasing interior illumination, and removing visual barriers between segments of the structures. Also common in Gothic churches is increasing realism in sculpture, indicating a move away from the idea that naturalism in religious art would be a dangerous distraction from the spiritual message of that art.
Robert Grosseteste (c. 1168-1253) was the first major author to demonstrate the renewed interest in optics. He incorporated the works of over a dozen classical and Arabic scholars into his own scientific treatises, written approximately from 1220 until 1235. His most innovative treatise is De Luce, in which he describes a highly original cosmogony that identifies light as the first form of the universe. Light is no longer an analogy for Grosseteste, but the actual original form of creation (Grosseteste, De Luce 10–11; Miccoli 74; McEvoy, The Philosophy 151–53). As a consequence of Grosseteste’s theory, he concludes that all of creation, including humanity, partakes of God’s light and that the nature of divine light does not change at the lunar sphere (McEvoy, Robert Grosseteste 91; Grosseteste, De Luce 15–16; McEvoy, The Philosophy 93–94, 180–81). This fact, in Grosseteste’s view, eliminates the need for angelic mediation between God and human souls in heaven. The greatest obstacle between people and their Creator is disordered affections, and it is the primary function of the Church to educate the people under its care in the avoidance and correction of disordered affections.

Grosseteste also contributed to the rapidly growing body of vernacular religious literature in the thirteenth century. He translated many of his sermons into Anglo-Norman and English, and he wrote a very popular religious Anglo-Norman poem most often called The Castle of Love, which was translated into English many times (McEvoy, Robert Grosseteste 140–53). The motivation behind these vernacular works was a desire to educate laypeople who did not know Latin. Grosseteste was an active participant at the Fourth Lateran Council of Pope Innocent III (1215), the decrees of which included requirements that laypeople be ministered to in their own languages, that the care of souls be considered the primary concern of the clergy, and that all Christians over the age of seven undergo confession and penance at least once a year (Disciplinary). When these
decrees were enacted, the laity were exposed to much more theological information than they had been previously, and their appetite for vernacular religious materials grew. Among those helping to fill this appetite were William Langland, the Pearl-poet, Chaucer, and Dante.

Chapter Two of this study will provide a more detailed survey of the history of number symbolism and sacred geometry, from pre-history to the fourteenth century CE. Chapter Three will do the same for optics and light metaphysics, from the fourth century BCE to the seventeenth century CE. Chapter Four contains a brief history of the development of Gothic architecture in France and its spread to England, Spain, the Holy Roman Empire, and Italy. Chapter Five examines selected works of literature from the late twelfth century to the fifteenth century for evidence of the influence of late medieval optics, light metaphysics, and Gothic architecture.
Chapter 2
Number Symbolism and Sacred Geometry

Number Symbolism

The foundations of my analysis are the concepts of number symbolism and sacred geometry and of light metaphysics and optics. The most ancient of these is number symbolism, so that is where I will begin. Vincent Foster Hopper’s 1938 study of the history of number symbolism is still the most comprehensive available, so I believe a summary of his findings will suffice to introduce the concept.

Hopper begins his study with Elementary number symbolism, a concrete, nature-based system that he sees as the foundation of a core of number symbols that are held in common by most cultures (Hopper 3–11). Elementary number symbolism begins with the most basic counting system—one, two, many. The recognition of two brings with it a recognition of many dualities in nature—hot/cold, up/down, male/female, etc. When the counting system evolves to include the concept of three, separate from many, the symbolism expands to include “good, better, best,” “one, both, all,” etc. Thus three is able to serve as the superlative or universal in the legends and myths of many cultures—the genie grants three wishes, the princess must choose from three suitors, and the hero must make three attempts to fulfill his quest. As Hopper puts it, “A single occurrence has no significance. A repetition is noticeable, but might easily be the result of coincidence. A third occurrence of the same nature gives the event the impress of law” (Hopper 5).
The counting systems and attendant symbolism expand over time to include the four winds and corners of the earth; five representing a hand, ten two hands, and twenty a man; and nine representing something that is almost ten and thus almost complete—“Troy was besieged for 9 years and fell on the tenth. Odysseus wandered 9 years and arrived home on the tenth” (Hopper 10). Hopper summarizes the Elementary system thus:

With the exception of the 5, all the numbers so far considered, though receiving additional connotations, seldom lose their fundamental elementary meanings. Two is diversity—antithetical pairs. Three is “all” (beginning, middle, end), 3 is best (superlative), 3 is holy (triads of gods). Four is the number of earth. Ten is completeness, finality, perfection; and 9 is all-but-complete or all-but-perfect. (Hopper 11)

The next system to develop is the Astrological (Hopper 12–32). This system is still very much tied to nature, but is more complex than the Elementary and begins to introduce more abstractions. Hopper looks to ancient Babylon for the earliest examples of Astrological symbolism:

The supreme secret which Ea taught to his son was always called “the number.” A couplet from Akkad testifies to the occult power thought to reside in number:

The corn which stands upright
Shall come to the end of its prosperous growth;

The number [to produce that]
We know it.

The corn of abundance
Shall come to the end of its prosperous growth;
The number [to produce that]

We know it.

A goddess, Nisaba, is characterized as “she who knows the significance of numbers and carries the tablet of the stars.” (Hopper 12)

Numbers were not merely associated with aspects of nature, they were believed to be tools of creation which could also be used to manipulate nature.

The lunar month was divided into four weeks, each seven days long, with the seventh day designated as an evil day when it is best not to undertake anything important. While there have been many systems for dividing the calendar, the Babylonian lunar month has been one of the most commonly used. Once this system was established, the number of symbolic meanings assigned to the numbers four and seven increased greatly. These include the four winds, seasons, watches of the day and night, elements, humors, and cardinal virtues (Hopper 14). One of the earliest recognized constellations is the Pleiades, which contains seven stars. These stars were identified with seven gods and seven demons. The constellation disappeared from the Babylonian sky for forty days each year, during the rainy season. The disappearance of the stars was believed to be the cause of the rainy season and was blamed on the demonic aspect of the seven stars. The return of the constellation marked the beginning of a new year and was attributed to the godly aspect of the seven stars. The disappearance was met with rituals involving the number seven, which were meant to ward off evil. The reappearance was met with a ritual burning of a bundle of forty reeds (Hopper 15–16). The number seven became so important in ancient Babylon that the Zikkurats were increased from three or four steps to seven steps to represent the ascent to heaven. This symbolism carries over into Christianity and can be seen in the seven terraces of Purgatory described by Dante.
Seven planets were identified and power over fate was attributed to them. It remained so important to the system of number symbolism that the planets number seven that Galileo’s discovery of Jupiter’s moons, which he proposed to count as planets, was rejected in part on symbolic grounds:

There are 7 windows in the head, 2 nostrils, 2 eyes, 2 ears, and a mouth; so in the heavens there are 2 favorable stars, 2 unpropitious, 2 luminaries, and Mercury alone undecided and indifferent. From which and many other similar phenomena of nature, such as the 7 metals, etc., which it were tedious to enumerate, we gather that the number of planets is necessarily 7. . . . Besides, the Jews and other ancient nations as well as modern Europeans have adopted the division of the week into 7 days, and have named them from the 7 planets: now if we increase the number of the planets this whole system falls to the ground. (qtd. in Hopper 17)

Like the Babylonians, the Pythagoreans believed that numbers were the building blocks of the universe: “All things have a number [. . .] and it is this fact which enables them to be known” (qtd. in Hopper 34). Pythagorean number theory, arising in Greece in the late sixth century BCE, assigned largely the same symbolic meanings to numbers as the elementary and astrological systems, but introduced geometric concepts to number symbolism. The number one is a point, two is a line, and three is a triangle. The triangle is the first plane figure, the first to have a perceptible surface, so three is the first “real” number. The triangle can be used to create five regular solids, the first four of which were used by Plato to represent the four elements: tetrahedron for fire, octahedron for air, icosahedron for water, and cube for earth. The fifth regular solid, the dodecahedron, represented the universe as a whole (see Fig. 1) (Hopper 35).
The arithmetic and geometric manipulations of Pythagoreanism were first applied to scriptural exegesis by Philo in the first century CE, and his work provided the model for later exegesis by both Jewish and Christian scholars (Hopper 46–49).

Early Christian number theory incorporated the systems found in every region where there were converts. Pagan terminology was replaced with Christian terminology—*one* as First Cause became *one* as God and *three* took on the symbolism of the Trinity—but the essential meanings of the numbers remained the same (Hopper 69–88). At the same time and in many of the same regions, Eastern mysticism and Western number theory were being combined by various Gnostic sects (Hopper 50–68). Gnostic number theories were then combined with early Christian theories in medieval philosophy, with Augustinian principles being the dominant influence (Hopper 89–90). All of the systems of number theory were seen as part of a single universal truth, and any conflicts that could not be resolved were simply ignored when they were inconvenient. Hopper provides the following example in his commentary on the system set forth by Hugo of St. Victor:
[Numbers] may be said to become more imperfect in direct proportion as they recede from unity, and a large number is therefore much more applicable to the creature than to the Creator. In actual practice, however, nearly any large number could be shown to partake of the nature of unity. Seven is a sacred number partly because it is made up of the first even number (4) and of the first odd (3). This is also true of 12. Ten, 100, and 1,000 are all a return to unity. Forty is apparently far removed from unity, but the aliquot parts of 40 add up to 50, which is unity because it signifies I Jubilee. By such astonishing feats of mathematics and logic, nearly any “rule” set down for the science of numbers may be abrogated at will. (Hopper 100–01)

Whatever traditions imparted the desired meaning to a number would be cited as proof of the theological point being made, while those that did not were simply not mentioned. This flexibility in no way diminished the truth or importance of number symbolism in the medieval mind. In fact, there doesn’t seem to have been any notion that the conflicts within the system could possibly indicate a flaw in the system.

It can be difficult for us today to understand the importance of number symbolism from ancient through medieval times. Debates over the number of angels that will fit on the head of a pin and attempts to precisely measure the power of a soul may seem like a waste of time to us now, but to those involved they were vitally important matters. Numbers were not merely symbols in the way we use the term today. The universe was actually composed of numbers. To know the number of a thing was to know the thing itself. Manipulating or invoking numbers allowed one to manipulate or invoke the powers those numbers belonged to. Thus, when the ancient Babylonians burned a bundle
of forty reeds during the new year festival, they drove away the forty devils who caused the floods of the rainy season. This ensured that there would be no more floods until the following season (Hopper 15). In the same way, when a temple was built with a circular floorplan and a hemispherical dome—such as the Rotunda of Tivoli (see Fig. 2)—the circular shape of the structure called into being infinity and divinity within the structure. Number symbolism and its derivative, sacred geometry, shaped both religious practice and the structures used for that practice for millenia.

![Fig. 2. The Rotunda of Tivoli (Lesser 2:XVIII).](image)

Sacred Geometry

Sacred geometry is a natural outgrowth of number symbolism and was used in the construction of sacred structures three millennia before the birth of Christianity. Using
shapes and ratios based upon specific numbers was believed to invoke the cosmic forces those numbers symbolized. This power was used to invoke deities, ward off evil, bring prosperity to a region, etc. The bases of this practice in both the ancient and medieval worlds were the systems of the _ad quadratum_ and _ad triangulum_. Both systems allowed architects and masons to maintain the proportionality of a structure using just a compass, a measuring stick, and a few simple calculations (see Fig. 3 and Fig. 4).

Fig. 3. _Ad Quadratum_ (Fonseca 90).
Once a basic figure and starting measurement were agreed upon, a geometric progression of figures was devised to determine the measurements of every element of the structure. One of the earliest written examples of the *ad quadratum* and *ad triangulum* systems is in Plato’s description in the *Timaeus* of the Demiurge creating the divisions that form the universe:

> And he proceeded to divide after this manner. First of all, he took away one part of the whole [1], and then he separated a second part which was double the first [2], and then he took away a third part which was half as much again as the second and three times as much as the first [3], and then he took a fourth part which was twice as much as the second [4], and a fifth part which was three times the third [9], and a sixth part which was eight times the first [8], and a seventh part which was twenty-seven times the first [27]. (Plato 35b-36b)
The Demiurge has created the universe according to the doubling sequence 1, 2, 4, 8 (ad quadratum) and the tripling sequence 1, 3, 9, 27 (ad triangulum). These sequences together also form the basis of Pythagorean musical harmony, which was described in Leon Batista Alberti’s *De Re Aedificatoria* (written between 1443 and 1452) as the foundation of correct architectural proportion (Fonseca 96).

Architectural applications of these proportions cited by Fonseca include the pyramids of Third Dynasty Egypt (90, 98), Stonehenge (see Fig. 5) (98), and the Great Stupa at Sanchi (see Fig. 6) (99).

![Fig. 5. Stonehenge (Fonseca 98).](image-url)
A fourteenth-century application of *ad triangulum* can be seen in the design of the Cathedral of Milan. The cathedral had originally been planned *ad quadratum*, but the resulting angles were considered too steep. The cathedral was redesigned *ad triangulum* to reduce the steepness of its proportions. Since work had begun and no one wanted to tear down what had already been built, a mathematician was hired in September 1391 to convert the plan of the cathedral from *ad quadratum* proportions to *ad triangulum* proportions (Frankl 53–55). In May 1392, the plan was modified again, with its steepness reduced further by the substitution of the Pythagorean triangle for the equilateral triangle that had been used by the mathematician (see Fig. 7) (Frankl 56).
The three regular figures of square, Pythagorean triangle, and equilateral triangle were preferred in architecture for the tasks of setting a proportional size for various elements within a structure and of enlarging the measurements of a model to full scale while preserving its proportions. This preference persisted through the centuries despite the fact that many other forms could be used for the same tasks and were used by medieval painters and sculptors (Frankl 57–58). The primacy of these three figures in architecture, particularly for the design of cathedrals, can be attributed to two factors, one mechanical and one symbolic. For the masons, regular figures were preferable to irregular figures, which were often used in painting and sculpture, because regular figures allow for greater exactness of proportion and thus improve the structural stability of the building. However, any regular figure would provide this exactness. The choice of square, Pythagorean triangle, and equilateral triangle as the preferred regular figures was made by the architects and can be traced back to Plato. As previously explained, Plato identified five regular polyhedra as the building blocks of the universe. He went on to
identify the square and the equilateral triangle as the building blocks of the five polyhedra, and the Pythagorean triangle as the building block of the square and the equilateral triangle (Frankl 58).

The pentagon, another figure in Plato’s cosmology, was sometimes used in conjunction with the *ad quadratum* system to create the proportion we now call the golden section. The pentagon, having five sides and five corners, represents the Pentateuch and the five wounds of Christ. Five is the sum of three and two, which represent the Trinity, God’s command to love God and one’s neighbor, the masculine and feminine (and thus all humanity), manifestation and promise (Hitchens 131). The pentagon also forms one face of a dodecahedron, which is the solid used by Plato to represent the universe. A line drawn between two nonadjacent corners of a pentagon is φ times the length of a side of the pentagon, and φ:1 is the golden section proportion.

In her analysis of the collegiate church of Saint-Quentin, Ellen Shortell determined that its proportions were derived from both the square and the pentagon. The majority of the structure was designed *ad quadratum*, but the hemicycle, ambulatory bay, and radiating chapels were designed around the pentagon (see Fig. 8 and Fig. 9) (Shortell 128–34). Otto von Simson, in his analysis of the façade of Chartres West, found that the portals and tympana were designed *ad quadratum* and *ad triangulum* while the statues in the jambs and sculptures in the archivolts were designed with golden section proportions using the pentagon (Simson 155).
Fig. 8. Pentagonal structure of Saint-Quentin (Shortell 144).

Fig. 9. Pentagonal structure of Saint-Quentin (Shortell 145).
The forms used by God to create the universe were used by architects to impart beauty and perfection to their cathedrals. A properly designed cathedral would invoke the perfection and beauty of God’s creation, though nothing created by man could match God’s creation.

The principles and methodologies of number symbolism and sacred geometry found in biblical exegesis and cathedral design were also employed in other areas, such as the design of illuminated pages in medieval Insular manuscripts. Just as a cathedral designed around sacred numbers, forms, and proportions would invoke the perfection of God’s creation, so would a manuscript illumination designed around these principles. Robert Stevick examined the illuminated pages of several manuscripts and developed a plausible theory of the construction techniques used by the illuminators. He concluded that the golden section ratio is the cornerstone of illuminated page design and that the layout of the pages was determined geometrically, using smaller versions of the tools used by masons in the construction of cathedrals (see Fig. 10).

Fig. 10. Geometric layout of an illuminated manuscript page (Stevick, “The 4x3 Crosses” 179).
In addition to constructing their pages according to sound architectural principles, the illuminators often imparted hidden meanings within their designs through the use of number symbolism and sacred geometry. M. M. Hitchens has examined the cross-carpet page F.33' in the Book of Kells in light of the theological meanings of numbers and geometric shapes (see Fig. 11).

Fig. 11. Book of Kells, F.33' (Meehan 26).

The basic form used to lay out any page in an Insular manuscript is believed to be the squared circle (see Fig. 12) (Hitchens 129; Stevick, “Echternach” 288–89; Stevick, “The 4x3 Crosses” 173).
This form begins with a cross, representing the Crucifixion; around the cross is drawn a circle, representing divinity; around the circle is drawn a square, representing the physical realm (the four corners of the earth, the four seasons, the four winds) (see Fig. 13).

The completed squared circle allowed the page to be precisely quartered without being folded (Stevick, “Echternach” 289) and provided as the foundation of the page “God and the order He imposed upon the formless void, that is, in this case, upon the blank page” (Hitchens 129–30).
For the cross-carpet page in the Book of Kells, a 4x3 rectangle was derived from the squared circle. *Four*, like the square, represents the physical realm, as well as the four Gospels, the four legs of the Cross, and “the four horsemen of the Apocalypse who will destroy the four corners of the world because, in a world returned to God, and therefore to the Circle, these corners will no longer be needed to define order.” *Three* represents the Trinity. The diagonal of this rectangle measures five, which represents the Pentateuch and the five wounds of Christ. *Five* contains *three* and *two*, which together represent humankind (the masculine and the feminine) (Hitchens 130–31). So before the page has a mark on it, its dimensions have imbued it with messages of transcendence from the physical realm to the spiritual realm.

The most obvious symbol on the cross-carpet page is the cross itself, clearly representing the Crucifixion. The structure of the cross carries additional meaning. The eight medallions represent two elements of humanity’s contract with God, circumcision and baptism, which traditionally took place on the eighth day of life. *Eight* also represents the Resurrection, which took place on the eighth day after the Crucifixion. The six decorated spaces between the medallions represent Creation, which was completed in six days, and the Crucifixion, which took place on the sixth day of the week (Hitchens 132–33). The placement of the medallions is also significant, since it was derived from the *vesica piscis*, which represents the Incarnation, death, and Resurrection of Christ and the bringing closer of God and humanity through Christ (see Fig. 14 and Fig. 15) (Hitchens 133–34).
Fig. 14. The *vesica piscis* (Hitchens 133).

Fig. 15. The placement of medallions on F33r determined by the *vesica piscis* (Hitchens 134).

Within this single page, one who understands number symbolism and sacred geometry can see God imposing order on chaos at Creation, the divine becoming human in Christ, the hope of resurrection, and the returning of all things to God at the Apocalypse.
Those who were educated in the systems of number symbolism and sacred geometry saw significance in the shape and number of everything because numbers and their corresponding shapes were the material God used to create everything. Of equal significance in the Gothic period are light metaphysics and optics, which are the next topics that must be examined.
Chapter 3
Light Metaphysics and Optics

The next foundational concepts to discuss are light metaphysics and optics. Optics is the scientific study of how light and vision work. These scientific explanations were frequently used by medieval philosophers to explain how the universe was created, how God’s grace is delivered to humanity, and other theological concepts. As interest in the scientific study of optics grew in Europe beginning around the twelfth century, the role of light in metaphysics grew more central. Beginning as a metaphor for the process of emanation that created the universe, light was by the twelfth century identified as the actual substance of creation. Under the influence of the heightened interest in optics and light, and in turn reinforcing this heightened interest, sacred architecture evolved to be more transparent and light-filled, allowing divine illumination to enter unimpeded and draw those within the church closer to God. Concern for the illumination of the laity also became more widespread in sacred literature in this period.

Light metaphysics and the study of optics first developed in Greece in the fourth century BCE. Greek optical and metaphysical texts were taken up by Islamic scholars, who focused their attention on optical processes. European scholars also made use of the Greek texts, but they divided their focus more evenly between optical and metaphysical processes. Around the second half of the twelfth century, translators from as far north as England worked in many areas of Spain (d’Alverny 444–49). Over the next century, these translators set about translating Greek and Arabic works into Latin, including the
Arabic translations of Aristotle and the commentaries of Averroës (Wolfson 374). By the late twelfth century, scholars as far north as England began to have access to Arabic works and to Greek works that had not previously been known in Europe. This influx of translations led to an upsurge in activity in the fields of optics and light metaphysics in Europe (Lindberg, “Genesis” 12–14; Gilson 261). Ironically, just as Islamic scientific treatises were inspiring a flurry of activity in Europe, Islamic culture was in the process of rejecting scientific pursuits as being dangerously prone to blasphemy and apostasy, due largely to the exhortations of the influential Persian philosopher Abu Hamid al-Ghazali (1058-1111 CE). Al-Ghazali believed that the explanations of natural phenomena provided by nature philosophy, including optics, were being interpreted as necessary and inevitable when they should have been interpreted as entirely subject to God’s will (Goldman 19–20; Al-Ghazali 1–4, 185–86). He illustrated his point with the following example:

[... the burning of a piece of cotton at the time of its contact with fire. We admit the possibility of a contact between the two which will not result in burning, as also we admit the possibility of the transformation of cotton into ashes without coming into contact with fire. And [the nature philosophers] reject this possibility. [...]

Firstly, the opponent may claim that fire alone is the agent of burning, and that being an agent by nature (not by choice), it cannot refrain from doing what it is its nature to do—after it comes into contact with a subject which is receptive to it.

This is what we deny. We say that it is God who—through the intermediacy of angels, or directly—is the agent of the creation of
blackness in cotton; of the disintegration of its parts, and of thier transformation into a smouldering heap of ashes. Fire, which is an inanimate thing, has no action. How can one prove that it is an agent? The only argument is from the observation of the fact of burning at the time of contact with fire. But observation only shows that one is with the other, not that it is by it and has no other cause than it. (Al-Ghazali 185–86)

Further, al-Ghazali objected to the fact that the nature philosophers based their theories in part upon the writings of nonbelievers—the Greek philosophers, specifically Socrates, Hippocrates, Plato, and Aristotle—thereby introducing falsehood into the philosophy of those who claimed to follow Islam. The philosophers and those who believed their theories were led so far astray that they must be considered apostates (Al-Ghazali 1–4). As the Islamic world was rejecting its scientific history, the Christian world embraced the products of Islamic science and incorporated them into an evolving Christian philosophy that would become modern science.

The earliest optical text known in medieval Europe was Plato’s *Timaeus* (c. 360 BCE), which also contained some of the earliest written examples of number symbolism and sacred geometry. Translations of part of the *Timaeus* were available as early as the fourth century CE and were used widely by Christian scholars, including Augustine, Robert Grosseteste, Bonaventure, and Roger Bacon. In this work, Plato theorized that the eye emits a beam of light, which combines with external light and returns to the eye carrying the form of the object being seen (Gilson 14). Plato’s optical theory served two purposes in the overall theory of the universe he presented in the *Timaeus*. First, his description of the function of eyes demonstrates that all things were created in the best
way to fulfill their purposes. Second, his description of the process of perception explains how we come to know the universe (45b-47e, 67c-68d). Light serves no metaphysical function and is not even used as a metaphor in the *Timaeus*, but the optical theory served as the basis for later theories that would use light metaphorically to explain the creation of the universe.

Aristotle (384-322 BCE) turned Plato’s theory around, placing primary importance on intramission, external light entering the eye, rather than extramission, light emanating from the eye. The key to Aristotelian optics lies in the nature of light, which he explains in *De Anima* (350 BCE) as the actualization of a transparent medium (ii7). The apparently empty spaces in the universe are actually filled with a transparent medium, which like all substances is composed of matter and form. Matter is the framework of substance, and form is what imparts properties to the matter. When matter fully achieves the properties imparted by form, it is actualized. When the transparent medium is in the presence of a luminous body, it achieves its full nature. Its actualized state is light. For vision to occur, the light must be accompanied by color, which is a characteristic (form) of the observed object (Lindberg, “Genesis” 7–8). Color passes through the actualized transparent medium to the eye, which directly perceives the color but does not perceive the other characteristics of the observed object. Characteristics such as shape and size are then determined by the *sensus communis*. All of the characteristics of the observed object are passed on to the imagination, which presents the intellect with a complete sense of the object (Gilson 16). The intellect collects impressions of individual objects and derives from them an understanding of the concepts the objects have in common. By collecting impressions of many cats, the intellect develops an understanding of the concept of “catness.” Once this understanding is
formed, it serves as a basis of comparison, so cats that do not exactly match prior observations can still be identified as belonging to the category *cat* (Smith, “Getting” 569–571). The process of causation by which the emanation of luminosity leads to vision parallels other causal processes described by Aristotle. For instance, the sun, in addition to being the primary source of luminosity, “was the efficient cause of coming-to-be on Earth” and “regulated the seasons, brought about rains, and had a role in human generation” because of the nature of its movement through the heavens (Gilson 172). While light is just one part of one causal process in Aristotle’s theories, it would take a more central role in later theories. Aristotle’s optical works were available in Latin translations by the end of the twelfth century CE and were used by Robert Grosseteste, Bonaventure, Dante, and Roger Bacon, among others (Lindberg, “Genesis” 14).

Euclid (fl. c. 300 BCE) introduced geometrical principles to the field of optics. His optical theory, like Plato’s, was primarily one of extramission, and he used the geometric properties of the light rays emanating from the eyes to explain how the intellect determines the size, shape, and position of the observed object. Rectilinear light beams emanate from the eye and form a visual cone with the apex at the eye and the base at the surface of the observed object (see Fig. 16). The length of the rays is determined by the distance between the eye and the observed object, and the angle of the cone is determined by the size and shape of the observed object (Gilson 10–11). Euclid’s *Optica* was translated from Arabic by Gerard of Cremona (c. 1114-1187) as *De aspectibus* and by an unknown translator as *De radiis visualibus*, alternately called *Liber de fallacia visus*. The *Optica* was also translated from Greek as *Liber de visu* in the early twelfth century by an unknown translator. Euclid’s *Catoptrica* was translated from Greek as *De Speculis* around 1150 by an unknown translator (Gilson 261). Robert Grosseteste is among the scholars who made use of these translations in his own optical works.
Euclid’s theory was refined and expanded by Ptolemy (c. 90-168 CE), who is credited with establishing the tradition of geometrical optics. He introduced the standard of dividing the study of geometrical optics into three branches: direct light, reflected light, and refracted light. He also greatly expanded the study of visual errors and their causes and “redefined and expanded Aristotle’s views on the causality of the heavens into a more detailed system” (Gilson 163). Ptolemy developed this system in Book One of his Tetrabiblos. The sun, moon, and planets act as causative agents on the earth and its inhabitants through their individual combinations of heating or cooling, drying or humidifying powers (Chapter 4). These powers are further categorized as beneficent or maleficent (Chapter 5), masculine or feminine (Chapter 6), and diurnal or nocturnal (Chapter 7). The sun, the moon, Saturn, Jupiter, and Mars have cycles of waxing and waning powers (Chapter 8). The strength of the effect any celestial body has depends in part on the angle at which its emanated power intersects the surface of the earth, with powers being stronger the closer they are to the perpendicular (Chapter 10). The planets also work together within their zodiac signs, houses, and triangles (four groupings of three zodiac signs each—northern [masculine], southern [feminine], eastern [masculine],...
and western [feminine]) to create complex causal patterns (Chapters 9–24). Ptolemy’s *Optica* was translated as *De aspectibus* by Eugene of Sicily around 1156-1160 (Gilson 261). The geometrical aspect of their theories created a link between optics and theology that contributed to Robert Grosseteste’s theory, in the twelfth century, that light was the first form of the universe. Roger Bacon also relied on Ptolemaic optics for his theories.

Galen (130-201 CE) took up the Greek theories of optics and incorporated them into his medical treatises on the anatomy and function of the eye, optic nerve, and optical centers of the brain. According to Galenic optics, the optic nerves are filled with a luminous spirit which overflows into the eyes and then emanates from the eyes as a “cone of sentient air.” This sentient air illuminates the perceived object and delivers the sensory information to the crystalline humor (“the sentient organ of vision”) at the back of the eye. The sensory information is then transmitted along the optic nerves and delivered to the four pneuma-filled chambers of the brain, which process the information (see Fig. 17 and Fig. 18). Galenic optics was known in Europe from the early twelfth century in Latin translations of Arabic works that made use of Galen’s theories, and from the late thirteenth century in Latin translations of Galen’s own treatises (Gilson 18–20). From the time Galen’s theories became known, they were combined with Aristotle’s, investing Galenic optics with more metaphysical import than Galen intended and Aristotelian optics with more physiology than Aristotle conceived of (Smith, “Getting” 573). The works of Aristotle and Galen shared a position of authority at the universities of Naples (established 1224) and Montpellier (established 1289) (Brock xx).
Light moved closer to the center of metaphysics within the neoplatonic theories of Plotinus (d. 270). Plotinus’s entire metaphysical system was based on the principle of emanation. The first cause of the universe, the One, emanates its essence and thereby
creates the Mind (nous). The Mind continues the emanation to create the Soul (anima mundi), which again continues the emanation to create “the world of sense experience” (Lindberg, “Genesis” 9; Gilson 176). Plotinus made heavy use of light similes to explain his system of emanation, as visible light was the most accessible example of emanation. Thus, the One emanates its essence like the sun emanates light and fire emanates heat. Light provided a link between the physical and the metaphysical, between image and archetype (Lindberg, “Genesis” 10; Gilson 177). By the thirteenth century, these similes and linkages were transformed and light became the actual substance of creative emanation rather than just an accessible parallel to creative emanation (Smith, “Getting” 578). This transformation would later be made manifest in the sacred architecture of Gothic cathedrals and in sacred literature. Although Plotinus’s Enneads were not generally known until Marsilio Ficino’s Latin translation and commentary was published in 1492, Plotinus’s theories were available in the writings of the Pseudo-Dionysius, translated into Latin in the late ninth century by John Scottus Eriugena (O’Meara 115).

Neoplatonism was taken up by St. Augustine (354-430), who was of course a major influence throughout the middle ages. Although Augustine did not develop a systematic theory of optics or light metaphysics himself, he applied the theories of others to his theological writings. Using the neoplatonic principles of emanation and unity, Augustine described the physical world not as inherently evil but as a potential moral trap for people who allow themselves to be caught up in materialism rather than seeing material things as manifestations of God’s goodness. Anyone who avoids the trap of materialism, regardless of education or religious belief, is open to God’s illumination, whereby the contemplation of a material object leads to a greater understanding of the immaterial realities manifested in the object. Following the examples of Plato and
Plotinus, Augustine used the relationship between light and vision to explain the relationship between illumination and understanding of intelligible objects (Mendelson; Miccoli 72), thereby creating an explicitly Christian body of light symbolism beyond what could be found in the Bible and set a precedent for Christian scholars to refer back to the writings of pagan and Muslim scholars.

The Pseudo-Dionysius (fl. c. 485-528) created a unique composite of neoplatonic philosophy and Christian theology. Like Augustine, he described a God who is both the remote One of neoplatonism and a loving deity who attends to prayers. Unlike Augustine, he also devised a neoplatonic rationale for the hierarchy of the Church, which mirrored the hierarchy of heaven, and for the sacraments (Corrigan, et al.). In De Cælesti Hierarchia, the Pseudo-Dionysius expressed his belief that the sense of sight provides humanity with its best tool for understanding the Divine (Corrigan and Harrington; Rorem 52–83). He began with the neoplatonic notion of procession and return, using light as a metaphor for “God’s self-revelation and its effect on those so enlightened by the divine ray” (Rorem 53). He employed this neoplatonic notion to establish a system of divine activity involving purification, illumination, and perfection—actions which were not original to the Pseudo-Dionysius but were developed more systematically by him than by his predecessors. These actions begin with God and are repeated down the celestial hierarchy, with the beings at each level imitating God’s actions according to their own natures. The purpose of these actions at every level of the hierarchy is to bring all God’s creatures to greater spiritual understanding of their Creator (Rorem 58–59). This purpose is achieved through the anagogical symbolism of the material world, which provides us with our only tools for contemplating the divine. The Pseudo-Dionysius focused primarily on vision as the means of examining the material world for its
symbolic significance, which consequently emphasized light as the means of delivering this significance (Rorem 77–79). The writings of the Pseudo-Dionysius became available in the West when a copy was sent to King Louis the Pious in 827 and gained influence with the ninth-century translation and commentary by John Scottus Eriugena and the twelfth-century commentary by Hugh of Saint-Victor (Corrigan and Harrington; Rorem 76–77).

Because the Pseudo-Dionysius was widely believed to be St. Dionysius the Areopagite, disciple of St. Paul (Corrigan, et al.), the introduction of Dionysian theology to the Latin west provided authority to view the material world not as an obstacle to be avoided on the path to God but as a collection of sign posts pointing the way toward God. If the material world can show us spiritual truth and light is one of the primary means of delivering truth, then light and material objects can be employed, carefully, for the spiritual betterment of humanity. John Scottus Eriugena (c. 800-877) translated the works of the Pseudo-Dionysius at the request of Charles the Bald. Eriugena expanded Dionysian theological aesthetics to encompass all five senses. The Dionysian influence on his theology is evident in works ranging from Periphyseon, his major work, to “Aurelae sidereae,” an incidental poem commemorating the consecration of a church (Rorem 79–81). In explaining some of the decisions he made when translating the Pseudo-Dionysius, Eriugena wrote that he “decided for claritus as the most adequate rendering of the numerous Greek expressions with which the Pseudo-Areopagite denotes the radiance or splendor emanating from the ‘Father of the lights.’” This choice is repeated by Suger in his description of the rebuilding of Saint-Denis and in the inscriptions he had placed throughout the new church. The repetition of clarere, clarus, clarificare, claret, clarificet indicates not only the pervasive brightness of the new church
but the divine radiance this brightness should lead visitors to the church to contemplate
(Panofsky, “Introduction” 21–24). Eriugena’s translation was the standard source of
Dionysian theology until that of John Sarracenus was completed around 1167. Even
then, scholars often consulted Eriugena in conjunction with Sarracenus (Rorem 77, 218).

Except for the writings of the Pseudo-Dionysius, there were few innovations in
Europe after St. Augustine until the twelfth century, but the Arabic scholars were very
active in shaping Galenic optics and neoplatonic light metaphysics in the intervening
centuries. It would take both the European and the Arabic traditions to form the
foundation of the metaphysical systems that influenced sacred architecture and literature
beginning in the twelfth century. Al-Kindi (d. c. 873), in his treatise known in the West
as De aspectibus, proposed the theory that the visual cone was composed of visual rays
emanating from every point of the eye’s surface. He developed this theory, in De radiis,
into a theory of universal radiation which stated that everything in the universe, including
words, emitted rays in every direction and from every point (Gilson 21):

it is clear that everything in this world, whether substance or accident,
produces rays in the manner of stars [. . .] and so we maintain that truly
everything which has actual existence in the world of elements emits rays
in every part and these rays fill in their way all the world of elements.
Hence, every place in the world contains rays from everything that has
actual existence. (qtd. in Gilson 22)

Al-Kindi’s interest in light was limited to its physical characteristics and effects, though
his theory of universal radiation would later be put to metaphysical use by Avicebron
(Miccoli 73). Al-Kindi’s De aspectibus was among the works translated into Latin in the
last twelfth century by Gerard of Cremona (Gilson 261).
Alfarabi (Abū Nasr al-Fārābi, c. 850-950), in his *De aspectibus*, was the first to place optics explicitly within the *quadrivium*. When his treatises were translated into Latin around 1150 by Dominic Gundissalinus, archdeacon of Segovia, Spain, the status of optics within European scholarship was elevated, contributing to the flurry of activity in the field in the twelfth and thirteenth centuries (Gilson 50; Eastwood 307). Additionally, the lists of recommended texts he provided for every subject within the *quadrivium* guided the twelfth-century translators in Spain to the books they needed to translate in order to carry the expanded *quadrivium* into Christian Europe (Glick, Livesey and Wallis 171).

Avicenna (Abu Ali Sina Balkhi, 980-1037), in his *Kitab al Shifa (Liber de anima)*, combined Aristotelian and Galenic theories with his own refinements, such as the five internal senses—*sensus communis, imaginativa, aestimativa, cogitativa*, and *memorativa*—which came to be associated with the chambers of the brain proposed by Galen. Avicenna also posited the existence of two types of light: *lux*, direct light from fire and the sun; and *lumen*, the illumination of the transparent medium by *lux*. This distinction allowed Avicenna to expand the role of light in vision beyond that given to it by Aristotle. While *lumen* is just the actualized state of the transparent medium, as Aristotle described all light, *lux* is inherently visible and is therefore able to play an active, instigating role in vision (Lindberg, “Genesis” 18; Gilson 25). Avicenna’s *Liber de anima* was available in Europe by 1200 and were first used extensively by John Blund (c. 1175-1248), master of Oxford and Paris and briefly Archbishop of Canterbury (d’Alverny 451).

Alhacen (Ibn al-Haytham, 965-1039) synthesized the dominant optical theories of Arabic scholars into a unified system. He also rejected those parts of the prevailing theories which he found problematic and proposed alternative explanations. For
example, he rejected Aristotle’s notion of intramitted forms as indivisible objects, which left scholars devising complex theories of how the forms could be reduced to a size that could fit into an eye. Alhacen proposed instead that intramitted forms are composed of an array of points, radiating from every part of the surface of the viewed object, which travel to the eye along geometrically determined paths, are transmitted to the brain, and are analyzed by the virtus distinctiva and intuitio to yield an accurate image of the viewed object (Gilson 26–28; Lindberg, “Alhazen’s” 328–30; Smith, “Getting” 578). He also rejected Aristotle’s description of light as the actualized state of a transparent medium, citing the ability of excessive light to cause afterimages or injury to the eye to support his theory that light is a thing of itself. Light was thus raised from a secondary to a primary role in vision (Lindberg, “Alhazen’s” 322–23). Alhacen’s Kitâb al-manâzir was translated in the late twelfth or early thirteenth century and was known as De aspectibus or Perspectiva. It was a major influence on the perspectivist writers of the late thirteenth century (Lindberg, “Alhazen’s” 330).

Avicebron (Solomon ibn Gabirol, c. 1020-1058) was a Jewish philosopher who was believed in the Christian West to be a Christian until the early twentieth century (Cantarino 50). He made few references in his writing to scripture and rabbinical commentary, which contributed to the centuries of mistaken identity. It also led to the general dismissal of his writings by Jewish scholars in the twelfth century. Christian scholars such as Duns Scotus, Dominic Gundissalinus, William of Auvergne, Alexander of Hales, and Bonaventure, by contrast, embraced his writings, which were available to them by the early thirteenth century (Lindberg, “Alhazen’s” 336). Avicebron’s Fons vitae describes the process of the human mind reaching greater understanding of and unity with the Divine through an inductive analysis of nature. The
lower levels of reality are described in Aristotelian terms, while the higher levels are
described in neoplatonic terms (Cantarino 57–58). In the descriptions of the higher levels
of reality, light is equated with the Divine: “the divine Will is Lumen emanans, while the
Light we find in the Cosmos is [. . .] Lumen emanatum. God in his essential infiniteness,
the origin of all, is Lux” (Cantarino 62). Creation is the action of Will upon matter.
“Matter [. . .] is the very idea and concept God had of the object of His divine
illuminative emanation even before it came into existence.” The light of God’s Will
illuminates matter and gives it form, bringing the object into existence (Cantarino 64–
66). In order to achieve understanding of the Divine, the human mind must examine and
analyze the physical realm while remembering that sense perception points the way to the
mind’s goal and is not a fit goal in itself. This method can lead the mind as high as the
Universal Intellect, which is as high as the neoplatonic universe goes. For Avicebron,
even this level falls short of the true nature of God. In order to move beyond Universal
Intellect, the human mind must entirely abandon sensuality. When the mind has
separated itself completely from the physical realm, it will come into understanding of
the Divine (Rosin 171–72).

Early evidence of a resurgence of European activity in optics and light
metaphysics can be seen in the writings of Abbot Suger (c. 1081-1151), who was
responsible for the Gothic transformation of St.-Denis. Suger found inspiration in the
philosophy of the Pseudo-Dionysius. A Greek manuscript of the Pseudo-Dionysius’s
Celestial Hierarchy had long been kept at St.-Denis and a copy of John Scottus
Eriugena’s translation was also kept there (Panofsky, “Introduction” 18; Moran). Suger
was influenced in his own writings by the Pseudo-Dionysius’s descriptions of the process
by which God, “the Father of lights,” is revealed to the material world by Christ, “the
first radiance.” God’s essence emanates down into material bodies, which are less pure but never entirely separated from God. Because all physical objects emanate from God, they can be used as guideposts to a greater understanding of God.

Every creature, visible or invisible, is a light brought into being by the Father of the lights….This stone or that piece of wood is a light to me…. For I perceive that it is good and beautiful; that it exists according to its proper rules of proportion; that it differs in kind and species from other kinds and species; that it is defined by its number, by virtue of which it is “one” thing; that it does not transgress its order; that it seeks its place according to its specific gravity. As I perceive such and similar things in this stone they become lights to me, that is to say, they enlighten me (me illuminant). For I begin to think whence the stone is invested with such properties….; and soon, under the guidance of reason, I am led through all things to that cause of all things which endows them with place and order, with number, species, and kind, with goodness and beauty and essence, and with all other grants and gifts. (qtd. in Panofsky, “Introduction” 20)

Suger, in his account of the renovations of St.-Denis, refers frequently to the need to provide material representations of the divine, shining objects that will lead those who view them into a contemplation of God (Panofsky, “Introduction” 19–20).

The writings of Robert Grosseteste (c. 1168-1253) mark the beginning of a new scientific movement in the Latin West. He was the first to synthesize the Augustinian tradition of optics and light metaphysics and the newly available Greek and Arabic treatises, incorporating Islamic nature philosophy into Christian philosophy just as it was being abandoned in its native lands (Goldman 19–20). Sources used by Grosseteste in
his optical treatises (written c. 1220-1235) include the works of Plato, Aristotle, Euclid, Pseudo-Euclid, Ptolemy, Plotinus, Augustine, Pseudo-Dionysius, John Scottus Eriugena, al-Kindi, Avicenna, Avicebron, and Averroës. The works of Alhacen, though widely used by the perspectivists, did not become available in the Latin West until after Grosseteste’s optical works had been written. His unique cosmogony and optical theories formed the basis of the thirteenth-century perspectivist movement, which in turn led to the development by the sixteenth century of the beginnings of science as we understand it today (Crombie 35–36, 116–18, 135–232; Lindberg, “Genesis” 14–42).

Ancient talismanic magic was based upon the notion that symbols are icons of the ideas they symbolize. For example, in the ancient Babylonian new year ritual, a bundle of forty reeds symbolized the forty-day disappearance of the Pleiades constellation (Hopper 15–16). Destroying the bundle in fire both symbolized the end of this forty-day period and actually helped bring about this end because, as symbols of the forty days, the forty reeds actually were the forty days. Christian philosophers carried this notion forward, using as justification the Platonic and neoplatonic view that physical objects are copies of ideal, immaterial originals and that the originals and their copies are metaphysically linked. Grosseteste and the perspectivists embraced and expanded upon this tradition, carrying it forward into the developing science.

Grosseteste’s most striking innovation is his cosmogony, described in his treatise *De Luce*, which gives light a more central role in creation than did any system previously. In the beginning, God created first form (corporeity) and prime matter. First form is light, which is created with a natural tendency to spread instantly and equally in all directions. This tendency results in the formation of a sphere. As light spreads, it carries matter with it, becoming a corporeal substance (Grossteste, *De Luce* 10–11;
Miccoli 74; McEvoy, *The Philosophy* 151–53). As the sphere expands, the corporeal substance becomes increasingly rarified until it reaches the point of maximum rarification. The sphere at this point is the firmament, the outermost sphere of the universe, which diffuses light and matter back toward the center (Grossteste, *De Luce* 11–13; Miccoli 74–75; McEvoy, *The Philosophy* 154–55). The eight inner celestial spheres are created by the progressive condensation of light and matter diffusing toward the center of the universe. The nine celestial spheres, though not equally rarified, are all fully actualized and thus immutable. Within the innermost celestial sphere, the densest light and matter become the four elements, which are subject to mutability because they are not fully actualized. The sphere of fire is immediately below the celestial spheres and in its turn creates the sphere of air. The spheres of water and earth are so dense that they are unable to separate fully from one another (Grossteste, *De Luce* 13–15; Miccoli 75; McEvoy, *The Philosophy* 154–55). The beliefs behind Grosseteste’s cosmogony appear again in his *Hexaëmeron*, in which he expands on Augustine’s belief that God is light. If God is truly light, then everything made in God’s likeness must be light. Since all of creation is made in God’s likeness, then all of creation must be light (McEvoy, *Robert Grosseteste* 91).

Light takes on different properties in its many roles in the universe: “[A]ll light is manifestation, or manifesting, or manifested, or the receptive subject of manifestation” (qtd. in McEvoy, *Robert Grosseteste* 94). As James McEvoy explains it:

1. The visible sun is the most expressive example of a light that both manifests itself and makes material objects visible, while not being manifest to itself but only to a higher light.

2. Color is simply light incorporated into matter and made manifest by light. The eye that perceives color is itself active and radiating, in virtue
of the light that constitutes its energy. Each of the senses is active through
the light that infuses them, but none is manifest to itself, though each in its
own way receives the manifestations of its object.

3. Intelligence is a light to which both other things and itself are manifest,
but which still requires a higher light of manifestation: the mind, whether
of angel or of man, requires to be illuminated by the primordial light in
which every creature partakes. The intelligence is spiritual light and is “in
some way all things” (cf. Aristotle, De anima), since the illumination it
receives from God opens up all realities to its comprehension.

4. The supreme and essential light, finally, is described as “light which
manifests itself to itself, while within itself all other things are manifest to
it.” In other words, in the perfect simplicity of the first light the principles
of knowing (principia cognoscendi) and the principles of being (principia
essendi) coincide. (McEvoy, Robert Grosseteste 94)

Grosseteste followed the tradition of assigning symbolic importance to numbers
and geometric figures. In his treatise De lineis, angulis et figuris, Grosseteste wrote

There is an immense usefulness in the consideration of lines, angles and
figures, because without them natural philosophy cannot be understood.
They are applicable in the universe as a whole and in its parts, without
restriction, and their validity extends to related properties, such as circular
and rectilinear motion, nor does it stop at action and passion, whether as
applied to matter or sense . . . For all causes of natural effects can be
discovered by lines, angles and figures, and in no other way can the reason
for their action possibly be known. (qtd. in McEvoy, The Philosophy 168)
With this statement, he expanded the formative role of number and geometry to include the physical realm as well as the spiritual realm. Euclidean geometry, and arithmetic to a limited extent, form the key to understanding heaven and earth. He went on to write treatises to explain the rainbow, climate variations, the changing of the seasons, the tides, and the measure of time, using Euclidean geometry as his primary tool (Lindberg, “Genesis” 14–17; Eastwood; Boyer; McEvoy, *The Philosophy* 168–80).

In *De luce*, immediately after his description of the separation of light and matter into thirteen spheres, Grosseteste turned his attention to demonstrating the unity of these spheres. Aristotle, in *De Caelo et Mundo*, stated that the superlunary spheres are composed of a different kind of matter than that composing the sublunary spheres. While retaining the superlunary/sublunary division, Grosseteste rejected Aristotle’s theory of quintessential matter and instead posited a continuum of matter throughout the universe. Earth and its inhabitants contain the same form and matter as the highest celestial sphere (Grosseteste, *De Luce* 15–16; McEvoy, *The Philosophy* 180–81). This continuum means that divine illumination is available to everyone, regardless of station, education, or moral purity. Grosseteste’s belief in the continuum linking heaven and earth affected his commentaries on the writings of the Pseudo-Dionysius. In the *Celestial Hierarchy*, in particular, the Pseudo-Dionysius set up a complex sequence of intermediaries between God and humanity. Grosseteste accurately translated the Dionysian hierarchy but rejected it in his commentaries, taking a position more similar to that found in Augustine’s writings. Instead of requiring intermediaries to facilitate humanity’s knowledge of God, even in the afterlife, Grosseteste insisted that a human soul in heaven can perceive God directly, as the angels do (McEvoy, *The Philosophy* 93–94).

Humanity’s greatest obstacle to knowledge of God is disordered affections—not love of
earthly things in itself, but love of earthly things that exceeds one’s love of God. Those who cling to their earthly desires delay or prevent their growth toward direct vision of God, though nothing prevents their development except their own obdurance. One who works at transcending earthly concerns gradually becomes freed from disordered affections and is increasingly able to see divine light and truth. This process is normally completed after death, allowing a soul who has reached heaven to have direct knowledge of God. On rare occasions, a mystic is momentarily lifted above the encumbrances of earthly existence and granted direct vision of God. While we are still encumbered with our mortal limitations and when we are not in the midst of a mystic vision, the best method available to us for gaining understanding of divine truth is “scientific inquiry concerning the unchanging principles of nature” (McEvoy, The Philosophy 324–29).

Grosseteste’s belief in a universal ability to receive divine illumination can be seen in his writings on the role of teaching in the perpetuation of truth on earth. The goal of the preacher is to reach out with parental love to his entire congregation and plant the seeds of truth, which will be nurtured by his own continued efforts and by divine illumination until the members of the congregation begin to manifest truth in their actions. Grosseteste refers to this process as a second birth for the congregation. The second birth is the beginning of the journey toward direct knowledge of God (McEvoy, Robert Grosseteste 189–91). Grosseteste’s beliefs regarding the importance of teaching were influenced by the ninth and tenth canons of the Fourth Council of the Lateran that the guidance of souls is the primary task of the clergy and that language barriers were not sufficient excuse to neglect that task (Disciplinary). Following this council there was a proliferation of pastoral writings, including many by Grosseteste, designed to teach clergy how to guide their congregations to greater union with God (McEvoy, Robert Grosseteste
Grosseteste also wrote many works in his native Anglo-Norman tongue in order to educate the laity directly. One of the most popular of these works is a poem now known as “The Castle of Love,” which can also be found in four Middle English translations (McEvoy, Robert Grosseteste 146–53). Grosseteste stated his purpose for writing the poem in the vernacular in the opening couplets:

But not all can know well the language
Of Hebrew, Greek and Latin
To praise their Creator.
May the mouth of the singer
Never fail to open in praise of God
Or to announce His holy name,
And may each one in his own language
Know in himself without fail
His God and his redemption.
I begin my statement in Romance
For those who do not know well
The letters of the clergy. (qtd. in McEvoy, Robert Grosseteste 150)

St. Bonaventure (c. 1217-1274) saw light in much the same way as Grosseteste did. Light was the first corporeal substance and the primary instrument of creation, though Bonaventure wrote that God first created the outermost celestial sphere, which radiated light inward in all directions, in contrast to Grosseteste’s initial point of light (Lindberg, “Genesis” 17). Light, according to Bonaventure, is also a fifth element, so there is symmetry between the elements and the external senses (Miccoli 80). The five elements exist in all bodies, spiritual and corporeal, in the proportion appropriate to each
body. The closer to God a body is in the hierarchy of the universe, the greater the proportion of light in that body. Humanity has the greatest proportion of light among sublunary bodies, and it is this light which makes it possible for the human soul to be purified enough to enter heaven (Lindberg, “Genesis” 17–18; Miccoli 80–81). Like Grosseteste, Bonaventure believed that the best way to gain understanding of God and work toward the purification of one’s soul was to study nature, but Bonaventure put more emphasis on the emotional response to beauty as the first step in this process. Beauty is a sign of harmony with truth, and we instinctively feel pleasure when we perceive beauty. If we reflect on the cause of our instinctive pleasure, we come to understand the nature of the beautiful object’s harmony with truth and then come to understand truth itself (Miccoli 77). Bonaventure’s sources included Plato, Aristotle, Augustine, Plotinus, the Pseudo-Dionysius, Averroës, Avicenna, and Grosseteste (Noone and Houser).

The views of Grosseteste and Bonaventure on the multiplication of species and the corporeity of light influenced the theories of the first of the perspectivists, Roger Bacon (c. 1220-1292). The perspectivists gathered the optical and metaphysical theories of ancient, Arabic, and European scholars from Plato to Bonaventure and developed the most systematic explanation up to that time of visual perception and cognition, humanity’s primary means of understanding reality. Bacon’s sources included Plato, Aristotle, Ptolemy, Galen, Augustine, al-Kindi, Avicenna, Alhacen, Averroës, Aquinas, and Grosseteste (Hackett). Every object in the universe emanates its species into a transparent medium. Species is composed of visible light and color and contains information about the object. If there is an observer to receive the emanation, the species first strikes the crystalline lens of the observer’s eye. This lens strips away the first layer of the species, called the physical species. The subsequent layer, the visible species,
travels to the *ultimum sentiens*, which strips away this layer to reveal the sensible species. The sensible species is stripped away by the intellect to reveal the intelligible species. The intelligible species reveals to the intellect the true nature of the observed object. The media that the species passes through are increasingly animate and spiritual and exert greater control over the species as the process of perception and cognition proceeds. The transparent medium is entirely inanimate and corporeal and exerts no control over the species. The crystalline lens, humors, and optic nerve are animated by visual spirits and are able to refine the information contained in the species. The *ultimum sentiens* and imagination are animated by animal spirits and are able both to refine and to control information. The *cognitiva* and the *memorativa* are fully animate and spiritual and can extract and control the most refined information available in the species. Through memory and reason, the rational mind abstracts from accumulated sensory perception a greater conceptual understanding of the universe and, by extension, of God (Smith, “Getting” 585–87).

Perspectivist theories, particularly those found in Bacon’s writings, influenced the development of optics and cosmology through the sixteenth century. Perhaps of longest-lasting influence was Bacon’s theory that “there was no essential difference between the elements of mathematical description of physical phenomena as mathematical elements or in the physical phenomena” (Goldman 6). This correlation was expanded in the sixteenth century by John Dee (1527-1608) beyond arithmetic and geometry to include the more abstract mathematics of algebra. Steven Goldman sees in this expansion a sign of “the transition from a Dantesque cosmos to a Newtonian universe, the former displaying its principle of order overtly, the latter covertly” (5). The idea that physical phenomena and the mathematics that describe them are equally real can be found in the writings of
Galileo, Newton, Hume, Einstein, Schrödinger, and many others until the rise in the 1920s of quantum mechanics (Goldman 17), in which the most complex mathematical calculations can produce only probabilities and not absolute descriptions of subatomic phenomena, as described in Heisenberg’s uncertainty principle.

Baconian influences also pervade the work of Johannes Kepler (1571-1630), considered the father of modern optics and astronomy (Lindberg, “Genesis” 19–40). Kepler, in his *Astromiae pars Optica* (1604), described light, as a “mathematical surface,” not as just a substance that can be described mathematically (Lindberg, “Genesis” 42). As a mathematical substance, light is entirely incorporeal and intelligible. Kepler continued the tradition begun by Grosseteste that light is the basic building block of the universe and provides the key to understanding the universe (Lindberg, “Genesis” 29). Since light is mathematical, the key to understanding the universe is mathematics. In *Mysterium Cosmographicum* (1596), Kepler argued that the distances between the stars could be explained by fitting the five Platonic solids in a unique order within these spaces. The Platonic solids, while not physically present between the celestial spheres, were the organizing principle used by God to fix the positions of the spheres (see Fig. 19 and Fig. 20) (Barker and Goldstein 99–103).
At this point, Kepler had rejected geocentrism but still accepted the traditional circular orbits for the planets. In his *Astronomia Nova* (1609), Kepler attempted to calculate the
circular orbit of Mars (see Fig. 21) but determined that it was not possible to accurately predict the position of Mars using a circular model. By the end of this work, he had demonstrated that the only possible orbit for Mars, and by extension for all the planets, is elliptical (see Fig. 22) (Barker, et al. 106–11).

Fig. 21. The circular orbit of Mars, showing the abundance of epicycles necessary even to approximate the observed position of Mars in the sky (“Johannes Kepler”).
The necessities of observation and mathematics led Kepler to reject circular orbits despite the theological significance of the circle. However, he continued to believe that the series of Platonic solids defined the distances between the planets, as shown in his illustration of the universe in *Harmonices Mundi* (1619) (see Fig. 23).
Isaac Newton (1643-1727), in his *Philosophiae Naturalis Principia Mathematica* (1687), extracted from Kepler’s *Astronomia Nova* and *Harmonices Mundi* the principles now known as Kepler’s three laws of planetary motion. Newton modified and expanded upon Kepler’s laws and used them as the basis of his own law of universal gravitation.
Through Kepler and Newton, the developments in European optics and light metaphysics of the twelfth and thirteenth centuries continued to have an impact in the fields of optics and astronomy into the twentieth century (Goldman 17).

Humanity’s attempts to understand reality and our perception (or misperception) of it have included the symbolic and arithmetic manipulation of numbers, the study of geometry and geometric optics, and the study of natural phenomena as extensions of transcendental phenomena through the metaphysical action of light. Ancient Greek theories of optics and light metaphysics formed the basis of early Christian light metaphysics and were incorporated into the optical theories of Arabic scholars. These optical theories began entering Europe in Latin translations shortly before construction began on the Gothic west façade of the Abbey Church of St.-Denis (Simson 92) and the influx continued until around the time construction was completed on the first High Gothic structure, the Cathedral of Notre Dame at Chartres (Snyder 365). The introduction of new ideas about optics, inspiring and reinforced by the spread of a new, light-filled style of sacred architecture, contributed both to a more highly developed system of Christian light metaphysics and, in an attempt to better understand the metaphysics, to a more rigorous scientific study of optics that gradually developed into the methodology we now consider truly scientific.
Chapter 4

Gothic Cathedral Architecture

Now that the foundational concepts have been explored, we get to the heart of the matter. I believe that the introduction and development of Gothic cathedral architecture illustrates a shift in theological and cultural thinking that eventually led to the birth of humanism and secularization. The key to understanding these trends is to examine the use of number symbolism, sacred geometry, light metaphysics, and optics in Gothic cathedral architecture and then trace parallel use of these concepts in literature of the same period that reflects the shift in thinking.

France

While it is difficult to place firm labels on architecture, particularly when the labels were not used by the architects, it is generally agreed that the first Gothic church structure was the abbey church at St.-Denis, rebuilt under Suger beginning in 1137. The political and religious importance of the abbey and its abbot likely contributed to the spread of Gothic architecture through Europe. Suger was a friend to Pope Calixtus II, the French kings Louis VI and Louis VII, and the English king Henry I. St.-Denis had been the burial place of the French royal families since the fifth century CE and by tradition was the repository of the French crown (Simson 65, 69, 77, 107). Suger acted as political advisor to Louis VI and worked to create an unbreakable bond between the monarchy of France and the Church and to reconcile France and England (Simson 72–76, 107–08). The Abbey of St.-Denis was founded and built by King Dagobert and was believed to
have been consecrated personally by Christ. St.-Denis was the repository of the relics of the third-century St. Denis, who was credited with converting France to Christianity and who was considered the patron saint of France and its royal family. This St. Denis was conflated with the second-century St. Dionysius the Areopagite (Acts 17:34) and the fifth-century Pseudo-Dionysius, particularly after Abbot Hilduin of St.-Denis wrote the *Areopagitica* in 836 CE, presenting a biography combining the three men into a single religious figure (Simson 103). St.-Denis was also closely associated with Charlemagne, who was believed to have brought back relics from Jerusalem and presented them personally to the abbey. The banner of St.-Denis became the battle flag of the French monarchy in 1124 and was soon believed to represent the oriflamme of Charlemagne (Suger 75–84). So the abbey church, though a small church in a small town, was closely tied to the religious and national pride of France. Therefore, the radical changes to its architectural style brought about by Suger inevitably made an impression throughout the royal domain. Suger’s unique vision of a light-filled church, inspired by the neoplatonism of the Pseudo-Dionysius, was a spark that helped ignite the symbiotic evolutions of Gothic architecture and Christian optics and light metaphysics. Within a century of Suger’s redesign of St.-Denis, nine more Gothic cathedrals were begun just in the Greater Paris Basin: Sens (c. 1130-1162), Laon (c. 1160-1212), Notre-Dame at Paris (c. 1163-1250), Reims (c. 1165-1170), Chartres (1194-c. 1230), Troyes (c. 1208, resumed after 1228), Amiens (c. 1220-1269), and Beauvais (c. 1225-1272) (see Fig. 24) (Grodecki 407–09).
Fig. 24. Gothic cathedrals in the Greater Paris Basin built within a century of the rebuilding of St.-Denis (Scott 12).

Because the new architecture of St.-Denis was different from anything previously used, Suger felt the need to justify his design. Among his writings, three include descriptions of the rebuilding of the abbey church. The *Libellus Alter de Consecratione Ecclesiae Sancti Dionysii* (c. 1144-1147) provides a report on the second campaign of the rebuilding. The *Liber de Rebus in Administratione Sua Gestis* (c. 1144-1149) describes the rebuilding as well as the administration of the abbey. The *Ordinatio* from *Sugerii Constitutiones* (c. 1140-1141) provides justification for the reforms made by Suger, including the added decorations in the church, while establishing rules to preserve the reforms. In the sections of these works describing the rebuilding of the abbey church,
Suger attempted to explain his aesthetic theory and to demonstrate God’s approval of the new design (Panofsky, “Commentary” 141–43). Suger’s aesthetics were influenced by Christian neoplatonism as presented in John Scottus Eriugena’s translation and commentary on the *Celestial Hierarchy*. One of Suger’s goals was to fill the church with uninterrupted light:

Pars nova posterior dum jungitur anteriori,

Aula micat medio clarificata suo.

Claret enim claris quod clare concopulatur,

Et quod perfundit lux nova, claret opus

Nobile, quod constat autum sub tempore nostro,

Qui Suggerus eram, me duce dum fieret. (Suger 50)

Once the rear part is joined to the part in front,

The church shines with its middle part brightened.

For bright is that which is brightly coupled with the bright,

And bright is the noble edifice which is pervaded by the new light;

Which stands enlarged in our time,

I, who was Suger, being the leader while it was being accomplished.

(Suger 51)

With this verse, describing the joining of the new choir to the nave, Suger described the infusion of light into the rebuilt church (see Fig. 25) while echoing Eriugena’s use of *claritas* as translation of the Pseudo-Dionysius’s many terms for divine light (Panofsky, “Introduction” 23). The new light served both an aesthetic and a spiritual purpose, making the church more beautiful and invoking the power of divine illumination.
While much of the architecture of the new church was different from anything that had been built before, it was not a complete break from tradition. Suger mentioned several traditional elements of the architecture while justifying the innovations. For example, arithmetic and geometry were used to ensure structural consistency between the old and new sections of the church and facilitate the illumination of the church:

Moreover, it was cunningly provided that—through the upper columns and central arches which were to be placed upon the lower ones built in the crypt—the central nave of the old nave should be equalized, by means of geometrical and arithmetical instruments, with the central nave of the
new addition; and, likewise, that the dimensions of the old side-aisles should be equalized with the dimensions of the new side-aisles, except for that elegant and praiseworthy extension, in [the form of] a circular string of chapels, by virtue of which the whole [church] would shine with the wonderful and uninterrupted light of most luminous windows, pervading the interior beauty. (Suger 101)

Geometry and arithmetic were used, as was traditional, to link the parts of the building to each other and to link the building as a whole to the spiritual realm. The “circular string of chapels” by its shape symbolized the eternity of God’s kingdom. Suger made a point of mentioning that these chapels also flood the church with uninterrupted light. Physical light, in Christian neoplatonism, is a manifestation of divine illumination, so Suger’s chapels were allowing God’s illumination to pass uninterrupted through their “most luminous windows” to reach the people gathered within the church.

The new architecture of St.-Denis also retained such traditional elements as columns representing the twelve apostles:

The midst of the edifice, however, was suddenly raised aloft by twelve columns representing the Twelve Apostles and, secondarily, by as many columns in the side-aisles signifying the number of the [minor] Prophets, according to the Apostle who buildeth spiritually. Now therefore ye are no more strangers and foreigners, but fellow citizens with the saints and of the household of God; and are built upon the foundation of the apostles and prophets, Jesus Christ Himself being the chief cornerstone which joins one wall to the other; in Whom all the building—whether spiritual or material—groweth unto one holy temple in the Lord. In Whom we, too,
are taught to be builded together for an habitation of God through the Holy Spirit by ourselves in a spiritual way, the more loftily and fitly we strive to build in a material way. (Suger 105)

Suger’s modified quotes from Psalm 45 and Ephesians 11:20-22 (italicized by Panofsky) emphasize the role of church building as physical manifestation of the heavenly kingdom (Panofsky, “Commentary” 241–42). St.-Denis, like any church, used number symbolism and symbolic geometry to invoke the spiritual realm and call it into being in the physical realm and used the metaphysics of light to make the presence of the spiritual even more apparent to everyone who entered, both clergy and laity. Suger made it clear that the radical changes to the architecture of St.-Denis did not make the church any less valid a symbol of God’s kingdom.

The traditional use of number symbolism and sacred geometry continued to play an important role in Gothic architecture, as demonstrated in the Manuale de mysteriis ecclesiae of Pierre de Roissy, Chancellor of the Cathedral School at Chartres (c. 1200-1213), which opens with an allegorical explanation of cathedral architecture. While such explanations were common at the time, this particular treatise is unusually specific, apparently referring to particular structures, including Chartres Cathedral, rather than an abstract church. There are references to both tripartite and quadripartite elevations and possibly to the pilier cantonné, large columns surrounded by colonnettes, which were first used in Chartres Cathedral. Within this treatise, allegorical meanings are given for the architectural elements of the building, the numbers of some of these elements, and the ad quadratum ratios of the overall structure. The windows of a cathedral are described as “‘divine writings’ that ‘throw the light of the True Sun, that is to say the light of God, into the interior of the churches, that is into the hearts of the faithful by filling them with light’” (Simson 195–97; Pastan and Shepard 11).
As a physical manifestation of the heavenly kingdom, the church building must fulfill a spiritual role. According to Suger, the new light and the many opulent objects within the abbey church of St.-Denis, all decorated with materials that reflect light, were to serve as anagogical tools, guiding the minds and souls of everyone entering the church toward God:

Portarum quisquis attollere quæris honorem,
Aurum nec sumptus, operis mirare laborem,
Nobile claret opus, sed opus quod nobile claret
Clarificet mentes, ut eant per lumina vera
Ad verum lumen, ubi Christus janua vera.
Quale sit intus in his determinat aurea porta:
Mens hebes ad verum per materialia surgit,
Et demersa prius hac visa luce resurgit. (Suger 46, 48)

Whoever thou art, if thou seekest to extol the glory of these doors,
Marvel not at the gold and the expense but at the craftsmanship of the work.
Bright is the noble work; but, being nobly bright, the work Should brighten the minds, so that they may travel, through the true lights, To the True Light where Christ is the true door.
In what manner it be inherent in this world the golden door defines:
The dull mind rises to truth through that which is material And, in seeing this light, is resurrected from its former submersion.
(Suger 47, 49)
Again, Suger echoes the language of Eriugena when invoking divine illumination. The elaborate gilded door, which could be seen as a sign of decadence, is meant to serve as a physical manifestation of God’s light. A person admiring the beautiful new door to the church should follow Dionysian teachings by examining the door more for its symbolic significance than for its superficial beauty. Suger took the role of material objects further than the Pseudo-Dionysius did, arguing that the use of material splendor on sacred objects was not just permissible, but necessary.

We should have insisted with all the devotion of our mind—had we but had the power—that the adorable, life-giving cross, the health-bringing banner of the eternal victory of Our Savior (of which the Apostle says: But God forbid that I should glory, save in the cross of our Lord Jesus Christ), should be adorned all the more gloriously as the sign of the Son of Man, which will appear in Heaven at the end of the world, will be glorious not only to men but also to the very angels; and we should have perpetually greeted it with the Apostle Andrew: Hail Cross, which art dedicated in the body of Christ and adorned with His members even as with pearls. But since we could not do as we wished, we wished to do as best we could, and strove to bring it about by the grace of God. Therefore we searched around everywhere by ourselves and by our agents for an abundance of precious pearls and gems, preparing as precious a supply of gold and gems for so important an embellishment as we could find, and convoked the most experienced artists from diverse parts. They would with diligent and patient labor glorify the venerable cross on its reverse side by the admirable beauty of those gems, and on its front—that is to say in the
sight of the sacrificing priest—they would show the adorable image of our Lord the Saviour, suffering, as it were, even now in remembrance of His Passion. (Suger 57, 59)

Failure to adorn the cross with as much light-reflecting gold, pearls, and gems as Suger could acquire would have been an insult to God. These treasures could be acquired only with the grace of God, so the fact that Suger was successful demonstrates God’s approval of the project. The treasures, especially the pearls, symbolized the passion of Christ and covered the side of the cross facing the laity, who were most in need of the anagogical assistance provided by such symbolic objects. Although the symbolic glory of material treasures was meant to edify the laity, Suger could not count on the uneducated masses to understand the true meaning of the objects filling the church. To protect his congregation from the human tendency to admire material beauty for its own sake, Suger covered the church with explanatory verses. The rebuilt main altar was one of the objects in need of explanation:

And because the diversity of the materials [such as] gold, gems and pearls is not easily understood by the mute perception of sight without a description, we have seen to it that this work, which is intelligible only to the literate, which shines with the radiance of delightful allegories, be set down in writing. Also we have affixed verses expounding the matter so that the [allegories] might be more clearly understood:

“Crying out with a loud voice, the mob acclaims Christ: ‘Osanna.’ The true Victim offered at the Lord’s Supper has carried all men. He Who saves all men on the Cross hastens to carry the cross. The promise which Abraham obtains for his seed is sealed by the flesh of Christ.
Melchizedek offers a libation because Abraham triumphs over the enemy.

They who seek Christ with the Cross bear the cluster of grapes upon a staff.” (Suger 63)

The main altar was further decorated with the cross of St. Eloy, which, like the church’s larger cross, required as many gems as Suger could find to help it fulfill its anagogical function.

*Every precious stone was thy covering, the sardius, the topaz, and the jasper, the chrysolite, and the onyx, and the beryl, the sapphire, and the carbuncle, and the emerald.* To those who know the properties of precious stones it becomes evident, to their utter astonishment, that none is absent from the number of these (with the only exception of the carbuncle), but that they abound most copiously. Thus, when—out of my delight in the beauty of the house of God—the loveliness of the many-colored gems has called me away from external cares, and worthy meditation has induced me to reflect, transferring that which is material to that which is immaterial, on the diversity of the sacred virtues: then it seems to me that I see myself dwelling, as it were, in some strange region of the universe which neither exists entirely in the slime of the earth nor entirely in the purity of Heaven; and that, by the grace of God, I can be transported from this inferior to that higher world in an anagogical manner. (Suger 63, 65)

The cross of St. Eloy was embellished with the same gems that covered Aaron’s breastplate (Exodus 28:13). These gems were also linked by Gregory the Great in his
Magna Moralia (c. 578-595) to the nine orders of angels expounded upon by the Pseudo-Dionysius in the Celestial Hierarchy. The gems also represented the tribes of Israel and each had its own magical properties (Panofsky, “Commentary” 191). All of these meanings would be called to mind when an educated person viewed the gems, while the beauty of the gems would capture the minds of both educated and uneducated viewers. Proper contemplation of the gems leads the mind closer to God.

To demonstrate God’s approval of the radical changes being made to St.-Denis, Suger related several miracles by which God ensured the success of the rebuilding. The building stones, marble columns, and beams for the new nave and towers all miraculously appeared in nearby quarries and forests when it had appeared that they would have to be imported great distances at great expense. Not only were the building materials found in areas where everyone was certain no such materials existed, but they exactly met Suger’s specifications (Suger 88–97).

By the ninth hour or sooner we had, through the thickets, the depths of the forests and the dense, thorny tangles, marked down twelve timbers (for so many were necessary) to the astonishment of all, especially those on the spot; and when they had been carried to the sacred basilica, we had them placed, with exultation, upon the ceiling of the new structure, to the praise and glory of our Lord Jesus, Who, protecting them from the hands of plunderers, had reserved them for Himself and the Holy Martyrs as He wished to do. Thus in this matter Divine generosity, which has chosen limit and to grant all things according to weight and measure, manifested itself as neither excessive nor defective; for not one more [timber] than was needed could be found. (Suger 97)
Suger related an additional sign that God was providing the materials needed for the rebuilding of St.-Denis in his story of a group of seventeen children and disabled villagers retrieving a marble shaft that would ordinarily have required one hundred or more able-bodied men. The small band prayed to St. Denis for help and God gave them the ability to move the shaft (Suger 92–95). The provision of building materials by God demonstrated approval of the act of rebuilding the church, but Suger also needed to demonstrate God’s approval of the new style used in the rebuilding. The nave vaults were built in a style that would become characteristic of Gothic architecture—transverse arches and diagonal ribs linked and stabilized with webs. On the night of January 19, 1143, a commemorative mass was held for King Dagobert under the completed arches and ribs, which were topped with a roof but had not yet been stabilized with webs. A terrible storm destroyed many buildings in the area and caused the incomplete vaults to sway, but God drove back the wind and spared the new Gothic structure (Suger 108–09; Panofsky, “Commentary” 242–44).

The new style of St.-Denis, approved by God and overseen by Suger, had foundations in some late Romanesque developments in Normandy and Burgundy. Suger had ties to both regions that would have enabled him to become familiar with their architectural styles and to have contacts to help him hire builders from both regions. From 1104 until approximately 1106, Suger studied in Burgundy (Panofsky, “Commentary” 225) and in 1119 Guy of Burgundy became Pope Calixtus II. Three years later, while Suger was serving as France’s representative to the Pope, Calixtus appointed him Abbot of St.-Denis (Simson 69). Suger’s ties to Normandy were forged in 1107 and 1108 when he served as Abbot’s Deputy at Berneval-le-Grand (Panofsky, “Introduction” 7). The rebuilt St.-Denis incorporated two architectural innovations from these regions.
that came to be seen as defining characteristics of Gothic architecture: the pointed arch and the ribbed vault.

The Burgundian pointed arch grew out of an architectural style that migrated into Burgundy with Lombard masons in the early eleventh century (Armi 9–14). In northern Italy, quarried stone was rarely available, so masons used bricks as their primary construction medium. The shape and tensile characteristics of brick contributed to a unique architectural style. The building methods of the Lombard masons were so closely tied to the characteristics of brick that when they traveled to Burgundy and had quarried stone available to them, they routinely cut the stone to the shape and size of bricks (Armi 14–17). One characteristic of brick-based architecture that migrated into Burgundy was the pointed web (see Fig. 26). Raising the top of the web from the semicircular shape common in northern Europe caused the weight of the vault to descend at a steeper angle, requiring less lateral support, fewer building materials, and less construction time (Armi 31). In Lombardy, the pointed web was typically paired with semicircular arches, but by the end of the eleventh century in Burgundy, the pointed web was generally accompanied by pointed arches (Armi 6, 32–33). Pointing the arches further reduced the time and materials needed to construct vaults by eliminating the transition from point to semicircle (Armi 79–80). The combination of pointed web and pointed arch distributed the weight of the vault more efficiently and allowed bays to be raised, providing uninterrupted views down aisles (Armi 80). While the pointed web and arch allowed a reduction of mass and increase of height, Burgundian Romanesque structures remained heavy in comparison with later Gothic structures and their windows remained deeply-set and relatively small (see Fig. 27).
Fig. 26. Oleggio, San Michele, interior, crypt, central and southern aisles; (a) corbeled base of groin vault; (b) arris of true vault; (c) square-edged reveal; (d) pointed web.
The earliest experiment with ribbed vaulting was in Durham Cathedral (1093-1133) (see Fig. 28). The method spread from England to Normandy in the early twelfth century and from there to the Ile de France (Bony 1–2). The ribs were built first and provided centering for the construction of the vault. After the vault was complete, the ribs served a purely decorative function. It is possible that builders in the eleventh and twelfth centuries believed the ribs helped support the vaulting and that belief made them feel more secure in their continued experimentation with vaulting in Gothic structures (Snyder 354; Alexander, Mark and Abel 251).
The pointed arch and ribbed vaulting, combined with enlarged windows and spatial arrangements designed to allow uninterrupted flow of light from the windows made such an impression on the prelates who participated in the consecration of St.-Denis on June 11, 1144, that at least six of them (or their successors) had Gothic cathedrals under construction within 30 years: Samson, Archbishop of Reims; Guy, Archbishop of Sens; Theobald, Archbishop of Canterbury; Geoffrey, Bishop of Noyen; Alvise, Bishop of Arras; and Peter, Bishop of Senlis (Suger 112–13). Geoffrey, Bishop
of Chartres, was the prelate celebrating the commemorative mass for King Dagobert in St.-Denis on the night of January 19, 1143, when the wind storm threatened the new vaults (Simson 148–49; Suger 108–09). These men are responsible for just a small part of an explosion of construction in the twelfth and thirteenth centuries, including approximately eighty cathedrals in France alone (Camille 27–28).

The cathedral at Sens (c.1145) was the first cathedral built in the Gothic style, St.-Denis being an abbey church. The windows were enlarged twice during the construction of the cathedral (c. 1230 and c. 1310). The importance of the window expansion is evident in the fact that the necessity to alter the curvature of the existing vaults to accommodate the larger windows did not deter the project (Simson 143).

The introduction of the flying buttress at the Cathedral of Notre Dame at Paris (1175-1200, 1225) allowed the nave to be built an unprecedented 108 feet high yet remain stable under wind pressure (Snyder 358). The original elevation included a band of oculus windows under single lancet windows (see Fig. 29).
These were removed after 1225 and replaced with double lancet and rose windows that cover the entire area of the original upper two rows of windows (see Fig. 30).
Fig. 30. The main altar of the Cathedral of Notre Dame at Paris and the windows installed after 1225 (Muehmel).

This modification increased the proportion of glass in the elevation, which in turn increased the illumination of the nave. Increasing the illumination was particularly appropriate to a cathedral dedicated to the Virgin. As Wim Swann has pointed out, “Light, which could pass through glass without breaking it, was likened to ‘the Word of God, Light of the Father, that had passed through the body of the Virgin’ and became a symbol of the Immaculate Conception” (48). The illuminated glass transformed the cathedral into a dwelling befitting the Virgin, whose cult was growing in popularity throughout the twelfth and thirteenth centuries. Notre Dame de Paris, in addition to being the first Gothic cathedral with flying buttresses, was the last Gothic cathedral with a tribune gallery (Swaan 110).
The Cathedral of Notre Dame at Chartres (1194-1220), the first of the High Gothic cathedrals, was also the first Gothic cathedral to omit the tribune gallery. The clerestory was expanded to almost half the 118 foot high elevation, with 44 foot high double lancet and rose windows (see Fig. 31).

Fig. 31. Clerestory windows of the Cathedral of Notre Dame at Chartres (Snyder 385).

There were originally 186 stained glass windows in the cathedral, with a total of 22,000 square feet of the wall surfaces made of glass (Snyder 363, 372–73; Swaan 122). Notre Dame at Chartres was the center of the cult of Mary in France and the repository of the Sacred Tunic, believed to be the garment worn by Mary at the birth of Christ. The cathedral was destroyed by fire on June 10 and 11, 1194, and when the Sacred Tunic was found undamaged in the crypt, the residents of Chartres decided that the Virgin was asking for a more fitting monument (Simson 159–63). The crypt, which had shielded the relic from the fire, was preserved, but the layout of the upper church was altered within
the original footprint in order to maximize the illumination of the ambulatory and radiating chapels. In place of the three deep chapels radiating from the ambulatory but failing to share their light with it, the new cathedral has seven shallow chapels spilling their light into the ambulatory (see Fig. 32 and Fig. 33) (Simson 185).

Fig. 32. Floorplan of Notre Dame at Chartres. The floorplan prior to the 1194 fire is in black and dark gray, and the post-fire floorplan is in light gray (Simson 187).
The belief that the construction of the new cathedral had been requested by the Virgin led to two unusual developments. The first is the extraordinarily short time needed to complete the structure—just 27 years. The second is the safe passage through England granted personally by King Richard I to the emissaries of Chartres who were seeking funds for the rebuilding, despite the fact that their two countries were at war (Swaan 120). The windows of Chartres illustrate another innovation—the increased involvement of the laity shown in the guild-sponsored windows (see Fig. 34).
The guilds that sponsored windows in the cathedral were financially dependant upon the fairs held at the festivals of the Virgin and had collectively grown wealthy enough to begin acting as patrons of the arts (Simson 164–67; Snyder 373).

Linked to the concept of divine illumination, symbolized by the illumination of cathedral windows, is the idea that studying nature can help a person find salvation rather than necessarily being a distraction from salvation. This shift in attitude towards nature, a turning away from the ascetic ideals of St. Jerome (Fremantle xi, xxx), can be seen in the sculpture of Chartres. As a point of reference, the late eleventh century *Doubting Thomas* in the choir of Santo Domingo de Silos exemplifies the stylized human form designed to illustrate theological points without distracting the viewer with a realistic human form (see Fig. 35).
Fig. 35. *Doubting Thomas*, choir of Santo Domingo de Silos (Snyder 260).

The sculpture of the Old Testament Precursors of Christ on the west façade of Notre Dame at Chartres (c. 1145-1170), part of the earliest of the three sculpture campaigns (1135-1160), already demonstrates more naturalism than the eleventh-century sculpture, though the figures are unnaturally rigid, having been conceived as columns rather than as free-standing statues (see Fig. 36). The columnar statues also conform to the golden section, with a dividing line at the elbow of each figure (see Fig. 37) (Simson 155). The later two sculpture campaigns (1194-1220, c. 1235) stand side by side on the south façade (see Fig. 38).
Fig. 36. Sculptures from the first campaign, Notre Dame at Chartres (Snyder 371).

Fig. 37. The golden section used to set the proportions of the sculptures from the first campaign, Notre Dame at Chartres (Simson Plate 22b).
St. Stephen (right, c. 1220) is less rigid than the Old Testament figures on the west façade but the folds of cloth are shallowly carved and the face is nondescript. By comparison, St. Theodore (left, 1230-1235) stands at ease, his robe falling in realistic folds. His features are those of a specific individual, not an indistinct human male. By 1230, a realistically portrayed St. Theodore was no longer considered a danger to the spiritual well-being of those who contemplated his statue.

Notre-Dame at Reims (c. 1211), traditional site of the coronations of French kings, is also the site of a pivotal development in the construction of cathedral windows. Earlier windows were constructed as individual openings in the stone wall. At Reims, a single, large opening was made for each group of windows and stone tracery was used to define the individual shapes (see Fig. 39).
Fig. 39. Windows of the west façade at Reims. Both rose windows are set into lancet-shaped openings with the roses defined by stone tracery (Snyder 390).

This method became the standard in Gothic cathedral construction (Swaan 127; Snyder 381). Because the entire large opening is filled with glass, the tracery creates more window shapes than were made in earlier structures—small medallions and triangular windows filling in the spaces around the lancet tops and roses. The overall effect is a reduction of structural stone members and a conversion of more of the wall to glass. The reduction of mass reached the point at Reims that the cathedral’s west façade has the appearance of stone lace (see Fig. 40).
Light passes through glass to illuminate the interior of the cathedral and light passes through the unglazed openings of the towers to impart lightness to the exterior of the cathedral. The cathedral at Reims also offers a significant development in Gothic sculpture, in the form of very realistic, humanized sculptures of two holy figures (see Figs. 41 and 42).
Fig. 41. The Angel Gabriel, Reims Cathedral (c. 1245-1255) (Snyder 394).

Fig. 42. Joseph, Reims Cathedral (c. 1245-1255) (Snyder 394).

The free movement and cheerful expressions of Joseph and Gabriel, introducing even more realism than that of St. Theodore at Chartres (see Fig. 38), are remarkable for
religious statuary and represent a complete rejection of the notion that sacred images must be highly stylized to prevent viewers from falling into the trap of admiring their physical beauty. In fact, the physical beauty of these statues should be studied for clues to their spiritual meaning.

Amiens Cathedral (1220-1288), at 139 feet tall, is the tallest Gothic cathedral to have been completed. Beauvais Cathedral was attempted at 158 feet, but the vaults collapsed in 1284, putting an end to the quest for ever-increasing height in French Gothic cathedrals, though the quest would later continue in the Holy Roman Empire (Snyder 373; Swaan 136, 226). The proportion of glass in the choir walls of Amiens was increased by adding windows to the walls behind the triforium. In order to accomplish this, the roof line of the ambulatory and chapels was changed to leave the triforium level clear of the roof. Constructing a separate roof for each chapel, rather than constructing a single lean-to roof over the ambulatory and all the chapels was significantly more work, but the extension of the glass wall down to the triforium was clearly considered worth the extra labor (see Fig. 43 and Fig. 44) (Swaan 136).
Fig. 43. Amiens Cathedral triforium and clerestory windows (Thun, “Image 19 of 190”).

Fig. 44. Roofline of Amiens Cathedral modified to allow for a glazed triforium and enlarged clerestory (Vassil).
The rose window of the south transept is another example of the increasing proportion of glass in Gothic cathedral walls (see Fig. 45).

Fig. 45. South rose window of Amiens Cathedral (Thun, “Image 17 of 190”).

Rather than being an isolated circular opening in a stone wall, the south rose is a large lancet opening spanning most of the upper wall and divided into multiple windows by the applied stone tracery using the method developed at Reims.

England

Gothic architecture travelled to England with William of Sens, who was brought over to supervise the rebuilding of Canterbury Cathedral in 1174 (Snyder 402). Early
English Gothic churches, such as Westminster Abbey (c. 1245-1517), retained traditional English floorplans and added selected French Gothic elements, including raised vaults and enlarged windows (see Figs. 46, 47).

Fig. 46. Nave, Westminster Abbey, London (Snyder 408).
Fig. 47. Windows in the Chapter House, Westminster Abbey, London (c. 1253). Single, large lancet openings are divided by stone tracery into four lancets and three roses (Snyder 409).

English Gothic churches reflect both English liturgical practices and a desire to increase the illumination of church interiors. For example, the west façades of Wells Cathedral (c. 1180-1306) and Salisbury Cathedral (1220-1258) echo French Gothic façades but have much smaller portals and less architectural depth (see Figs. 48, 49, 50).
Fig. 48. West façade of Wells Cathedral (Blum 146).

Fig. 49. West façade of Salisbury Cathedral (Blum 145).
Fig. 50. West façade of Amiens Cathedral, with the larger, more deeply-set portals characteristic of French High Gothic (Snyder 376).

While these departures from the French model have often been characterized as architectural defects (Blum 145), they are in fact carefully designed to accommodate the traditional Anglo-Saxon Palm Sunday procession. The row of angel statues over the portals conceals openings in the exterior wall (see Figs. 51, 52). Inside these openings is a passage (see Figs. 53, 54).
Fig. 51. Wells Cathedral exterior. Between the portal and the windows are the openings used by choir boys to sing the part of the angels during the Palm Sunday procession (Blum 147).
Fig. 52. Detail of the Wells Cathedral exterior, with arrows marking the openings through which the choir boys would sing (Blum 147).

Fig. 53. Wells Cathedral interior. What appears to be an extremely abbreviated triforium under the windows is actually part of the passage that provides access to the exterior openings (Blum 147).
Fig. 54. Salisbury Cathedral interior. Here the passageway to the exterior openings is more similar in design to the French triforium (Blum 149).

As the procession approached the portals, choir boys lined up in the passage would sing the part of the Angelic Choir through the wall openings, so that it sounded as if the angel statues had come to life and were singing the Gloria, laus et honor (Blum). Maintaining the traditional Palm Sunday procession was more important than importing French Gothic portals, however magnificent they may be. However, French Gothic concern with illumination was imported, and the smaller English portals are topped with tall lancets (see Figs. 48, 49).

Once Gothic architecture was established in England, English aesthetic preferences for broad walls covered with statuary (see Fig. 55) and elaborately decorated surfaces that play light against shadow led to the development of unique variations of
Gothic which nevertheless retained the tendency of French Gothic to replace stone with glass (Grodecki 223).

![Fig. 55. Wells Cathedral (Grodecki 213).](image)

The characteristics of the English Decorated style include increasingly elaborate tracery on massive Gothic windows (see Fig. 56).
In the Perpendicular style, lancet and rose window tracery grows beyond the windows and takes over the wall and vault surfaces, as in the south cloister of Gloucester Cathedral (see Fig. 57).
Gloucester Cathedral is also the site of the largest medieval English window, at 72 feet high and 38 feet wide (see Fig. 58) (Swaan 218).

Fig. 58. Gloucester Cathedral, East Window (Canis Major).

In King’s College Chapel (1446-1515), the entire interior surface of the nave vaults is covered with lancet tracery and the walls consist largely of glass (see Fig. 59).
Spain

Gothic architecture also spread south from France into Spain. The first early Gothic cathedral in Spain was built in Ávila in the twelfth century. High Gothic was introduced to Spain along the pilgrimage route to Santiago de Compostela (see Fig. 60).
Fig. 60. Map of the pilgrimage route to Santiago de Compostela showing the locations of the earliest High Gothic cathedrals in Spain (emphasis mine) (Snyder frontispiece).

The first High Gothic cathedral in Spain was begun at Burgos on July 20, 1221. In attendance at the ceremonial laying of the first stone was King Fernando III, cousin of King Louis XIII (Swaan 260). Within this cathedral, the French-influenced windows illuminate Islamic-influenced decorative elements such as the stellar vault over the crossing lantern (see Fig. 61).
The Gothic style was quickly adapted to suit the climate of Spain. Large French-style windows caused the heat inside the earliest Gothic cathedrals to become unbearable, so those early windows were blocked with masonry (see Fig. 62).
Fig. 62. Cathedral La Seu in Palma de Mallorca (1229-1601). The lower lancet windows have been blocked with masonry, while the upper windows have been left glazed (Schnittler).

Later cathedrals were built with smaller windows that let in less light but still created a spectacle of illumination (see Fig. 63) (Swaan 260).
Fig. 63. La Seu Cathedral, Palma (Swaan 14).

The stone tracery that defined Gothic windows in France moved outdoors in the cloister at Pamplona (begun 1397), defining areas of completely uninterrupted light. The external, unglazed tracery creates a pattern of light and shadow on the unbroken wall, echoing a northern Gothic window while allowing the interior of the cathedral to remain cool (see Fig. 64).
Holy Roman Empire

Gothic architecture first entered the Holy Roman Empire with the construction of the Church of St. Elizabeth at Marburg (1235-1310) and Strasbourg Cathedral (1236-1276). French construction details of the 1230s have been faithfully copied at Strasbourg, except for the width of the cathedral, which was determined by the foundation of the previous structure, and details of the west façade, which was constructed later and incorporated Germanic gothic developments (see Fig. 65) (Grodecki 176; Swaan 225).
The spread of Gothic architecture through the Holy Roman Empire was aided by the decline of Imperial power following the death of Conrad IV in 1254. As local nobility assumed greater power, they demonstrated their power and independence through the new architectural style. From Marburg and Strasbourg, Gothic architecture spread into Alsace, Swabia, and the Lower Rhine (Grodecki 176).

Cologne Cathedral (Hohe Domkirche St. Peter und Maria) (1248-1560, 1823-1880 following the original plans) continued the French experiment with ever-higher vaults. Its 150-foot high choir vaults were exceeded only by the doomed vaults at Beauvais (Swaan 226). Its 91,000 square foot interior is illuminated by 107,639 square feet of glass (see Fig. 66) (Swaan 226; “Interessantes: Maße und Zalen”).
Fig. 66. Cologne Cathedral choir, photographed before being damaged by aerial bombs during World War II (Hasak).

Among the many art treasures of Cologne Cathedral is the statue of St. Christopher, an example of increasing realism in art with its well-defined musculature and veining (see Figs. 67, 68).
Fig. 67. St. Christopher, carved by Tilman van der Burch (c. 1470), Cologne Cathedral (Spekking).

Fig. 68. Detail of St. Christopher showing veining and musculature of leg (Swaan 232).
The tower of Freiburg Cathedral (Münster Unserer Lieben Frau) (1200-1515) is the earliest example of the openwork spire which would become typical of German cathedrals (Janberg; Swaan 233). The Germanic spire, like the Spanish cloister, removes the glass from stone tracery to allow light to pass unimpeded (see Figs. 69, 70).

Fig. 69. Spire, Freiburg Cathedral (Swaan 234).
Ulm Cathedral (Münster Unserer Lieben Frau) (1377-1547, 1844-1890) contains many more examples of realism and increasing secularism in cathedral art. In 1429, Hans Multscher carved a figure of Christ with remarkable realism when compared to earlier images (see Fig. 71) (Swaan 246).
Fig. 71. Man of Sorrows, Ulm Cathedral. Hans Multscher, 1429 (Köhler, “Man of Sorrows”).

The choir stalls, carved between 1469 and 1474, are decorated with the busts of both secular and religious figures—men of antiquity, including Pythagoras, Ptolemy, and Virgil, and women who foretold the coming of Christ (see Figs. 72-75).
Fig. 72. Ulm Cathedral choir stall carving of Pythagoras (Swaan 246).

Fig. 73. Ulm Cathedral choir stall carving of Ptolemy (Swaan 249).
Italy

In Italy, as in England, Spain, and Germany, selected elements of Gothic style were incorporated into and modified by native architectural preferences. For example,
the rose window in Italy became either encrusted with heavy tracery that overwhelms the glass (see Fig. 76) or transformed into an oculus used as a canvas for paintings (see Fig. 77).

![Fig. 76. The western rose window at Orvieto (Swaan 297).](image)

![Fig. 77. The western oculus window at Siena (Soffei).](image)
As in Spain, the surface area of glass had to be reduced to prevent overheating of the cathedral interior, but the Gothic double lancet and rose was retained and surrounded with murals on stone walls that helped cool the buildings. Columns and vaults have the same shape as those in French Gothic cathedrals. In some cathedrals, the columns and vaults are decorated with Islamic-inspired painting (see Fig. 78), while in others they are left unpainted (see Fig. 79).

Fig. 78. Duomo di Orvieto, view of the apse (Swaan 291).
The tower at Florence Cathedral (Basilica di Santa Maria del Fiore) (1296-c. 1466, tower 1334-1357), the Campanile di Giotto, demonstrates the development of Gothic architecture in Italy. The tower was begun by Giotto di Bondone (1334-1337), continued by Andrea Pisano (Andrea da Pontedera) (1337-1348) and completed by Francesco Talenti (1349-1357) (Swaan 306–07). The double lancet and rose form appears in the unglazed openings of the second stage of the tower, designed by Andrea Pisano. In the third stage, designed by Francesco Talenti, the openings have been expanded to a triple lancet and rose configuration that is nearly twice as tall as the second stage openings. While the overall structure has been truncated by the absence of the spire, which was planned but never built, the tower still shows an increasing use of uninterrupted light as a design element, as seen in the cloister at Pamplona and the openwork spire at Freiburg (see Fig. 80).

Fig. 79. Basilica di Santa Maria del Fiore, interior (Gryffindor).
The desire to provide illumination to the laity, as expressed in many of the writings of Robert Grosseteste and in the importance placed by the mendicant orders upon sermons, gave rise to increasingly elaborate, prominently placed pulpits in Italian cathedrals beginning in the thirteenth century (see Fig. 81).
Fig. 81. Pulpit in the baptistry at Pisa, carved by Nicola Pisano (completed 1260) (JoJan; Handley).

The pulpit provided a frame for much of the Gothic sculpture in Italy. The trend of making the pulpit a central feature in cathedrals spread north from Italy through the fifteenth century (see Fig. 82) (Swaan 302).
As Gothic architecture spread through Western Europe, it underwent many regional modifications. Despite these variations, the goals expressed by Suger when he rebuilt the Abbey Church of St.-Denis remained at the forefront—to retain the symbolism and power of number and geometry and to supplement these with the metaphysical power of light in order to guide as many people as possible closer to God. These same goals influenced the literature of the period.
Chapter 5

Literature

Gothic architecture spread across Europe during the twelfth and thirteenth centuries, providing a visual representation of light metaphysics which reinforced the heightened interest in both light metaphysics and optics. The parallel development of science, theology, and sacred architecture contributed to a significant evolution of religious literature during the thirteenth and fourteenth centuries from consisting primarily of scholarly treatises written for the clergy to increasingly serving as a tool for the spiritual education of the laity. This evolution, in turn, triggered a backlash in the form of Arundel’s Constitutions (1407-1409). The Constitutions, fueled at least in part by clerical fear of a lay population liberated by knowledge and of the loss of the social standing and income associated with being the sole gateway to spiritual salvation (Watson 841–44), cut off the access of the lower classes to all but the simplest of religious materials and information. Pecham’s Syllabus (1281), which had been intended to define the minimum religious instruction the laity should receive, became instead the maximum they were permitted to learn (Watson 828). As a result of the Constitutions, the development of English vernacular religious literature was severely inhibited for over a century (Watson 859). Prior to the censorship by Archbishop Arundel, however, the English laity had access to a wide range of vernacular theology. These vernacular works used traditional stories and symbols molded by the emerging
belief that God’s divine light shines equally on everyone, so that everyone, regardless of station or vocation, can be helped to form a personal spiritual relationship with God.

The requirement for regular confession and penance by the laity was officially established in the eighth century but was widely ignored or subverted until the thirteenth century. During this interval, confession and penance seem to have been largely limited to the death beds of clergy (Murray). At the end of the twelfth century, the height of Gothic construction in Paris, the theology school in Paris tried to revive the requirement for regular lay confession and penance. One of the students of the Paris school at this time would become Pope Innocent III (Murray 63–64). The decrees of his Fourth Lateran Council of 1215 re-established the requirement for clergy to encourage confession and penance from the laypeople under their care as part of a wider duty to attend to the spiritual well-being of the laity. These decrees were slow to be communicated and slow to be implemented, but they did finally take hold, thanks in part to the efforts of such champions as Robert Grosseteste (McEvoy, Robert Grosseteste 140–145, 189–191).

Robert Grosseteste

The shift in focus following the Fourth Lateran Council led to a flurry of vernacular religious writings, including catechisms, confessionals, sermons, and works of fiction, all appearing during a time when an increasing number of Christians were receiving their religious instruction in new, light-filled Gothic churches. Among the earliest participants in this trend was Robert Grosseteste, who felt strongly that the primary concern of any member of clergy must be the spiritual care and education of the laypeople under his jurisdiction. In his theories of light, Grosseteste stated his belief that
humanity, like all earthly things, is made of the same form and matter as the celestial spheres (Grossteste, *De Luce* 15–16; McEvoy, *The Philosophy* 180–181) and that a human soul in heaven is capable of direct perception of God (McEvoy, *The Philosophy* 93–94). The spiritual light that pervades all of Creation, including humanity, was not quenched by original sin (McEvoy, *Robert Grosseteste* 94), our ability to perceive it was only dimmed by our disordered affections (McEvoy, *The Philosophy* 324–329). Grosseteste’s beliefs made no distinction between clergy and laity and were not limited according to an individual’s station, education, or moral purity. Therefore, according to Grosseteste, the church has a responsibility to minister to people of all levels of society in whatever manner most meets their needs, including translating sermons and writing instructive works in vernacular languages.

The most popular of Grosseteste’s efforts along these lines was his Anglo-Norman poem, which has been known as *Carmen de creatione mundi*, *Le Chasteau d’Amour*, and *The Castle of Love* (McEvoy, *Robert Grosseteste* 149–150). This poem was composed in Anglo-Norman between 1233-1242 and was translated—adapted, really, since all of the translations omit and insert long passages—into English many times throughout the fourteenth and fifteenth centuries (Rhodes 50–51). Following an account of the creation, there is a version of the traditional allegory of the Four Daughters, which dates back to at least the sixth century. The Four Daughters allegory is followed by a castle allegory that seems to be original to Grosseteste, though of a type popular since the eleventh century (McEvoy, *Robert Grosseteste* 152). Although the poem contains many traditional elements, Grosseteste shaped them to his own purpose. Among the traditional elements is number symbolism, seen in the four daughters, four castle towers, three colors on the exterior of the castle, a
well feeding four streams, an ivory throne with seven steps, three bailies, and seven barbicans. Traditional gemstone symbolism is represented by the colors assigned to the parts of the castle and, incorporating Grosseteste’s optical interests, by the colors of the rainbow that arcs over the castle. Incorporated into these traditional elements are expressions of Grosseteste’s beliefs regarding the relationship between God and each individual Christian.

In his description of the creation of Adam, Grosseteste makes a point of saying that Adam’s body, as well as his soul, was made in God’s image:

\begin{quote}
El val de hebron sanz dotance
Le fist de tere a sa semblance.
Apres la seinte trinite
Criat salme en verite. (Chasteau D’Amour 75–78)
He com to þe valey of Ebron.
Þer he made Adam [and-last] so riche
Of eorþe, after hym self i-liche;
And aftur his holy þrilli-hod
He schop his soule feir and good. (Castel Off Loue 126–130)
\end{quote}

Because the human body was created in God’s image, it can’t be evil and there is no reason to reject it. It only needs to be subjected to properly ordered affections, meaning affection for earthly things that is secondary to one’s love of God (Rhodes 55).

Removing the human body as an obstacle between the soul and God creates a greater closeness and makes each person’s union with God more possible.

Grosseteste further expressed his views through the modifications he made to the Four Daughters allegory. He shifted the traditional emphasis on Justice and Truth over
to Mercy and Peace, thereby changing the message from the need to punish sinners to the need to restore balance to creation by reconciling humanity with both the physical and the spiritual realms (Rhodes 57–58). Grosseteste also shifted the emphasis at the end of the allegory from the mercy of the King to the compassion and fellowship of the Son (Rhodes 58). The sense at the end is not so much of undeserved forgiveness from God as of kinship with Christ. Both alterations to the allegory serve to remove barriers between humanity and God, increasing the likelihood that any Christian who works toward reconciliation and union with God will succeed.

As the poem moves from the Four Daughters allegory to the castle allegory, Grosseteste describes Christ descending into the castle of Mary’s body as a shaft of bright light. When he emerges in a purified human form, he has purified all of creation, including humanity (Rhodes 60–61):

Ki peis sustient e peis guie
Mout est nature en belie.
Kant nature naturante
A nature est ignoraunte.
Ke nature naturee
Lors est nature puree.
Cent tant plus keinz nestoit
Einz kadam forfet avoit. (Chasteau D’Amour 863–870)

Nature, being purified, should be studied rather than shunned—a view that justifies Grosseteste’s own long study of natural phenomena as manifestations of God’s divine light.
Grosseteste’s description of the crucifixion defies the traditional view of the human body as a filthy trap for the soul. The greatest pain Christ experiences is his soul’s reluctant separation from his body (Rhodes 62):

Kar tant eime lalme le cors
Ke jammes nen istra fors.
Pur nule peine endurer
Si lem le vousist detrencher.
Ainz ke le cors eit perdu
De tuz inc sens la vertu.
Co est oir. e le veer
Li odorer. e le parler.
O le taster tut perdra
Ainz ke du cors partira.
Kar nature ne peut soffrir
Lalme einz del cors partir. (Chasteau D’Amour 1145–56)

For þe soule loueþ þe bodi so,
Þat neuer heo nule h₃ wende fro
For no pyne, ne for sore,
Þau₃ me hit to-hewe euermore,
Er þe fyf wittes ben loren out-riht,
Al heore vertue and al heore mi₃t.
Dat is þe siht, and þe herynge,
þe speche, and þe smellynge,
And þe felynge, he schal leosen an ende,
Ar he wole from þe bodi wende.
Kuyned ne may for no þinge
þolœ he þe tiþelynge.

Ac he þat all þing mai welde
Doublede his peyne and hondred felde;
For þo he pynede on þe Crois
He ʒaf his soule wiþ loud voys. (Castel Off Loue 1169–84)

The example set by Christ in this passage encourages readers to treasure their bodies and their senses and to use their senses as a tool to help them move closer to God.

The theology of universal divine illumination expressed by Grosseteste in the Chasteau d’Amour and in many of his sermons would have a lasting effect, though he likely would not have approved of some of the uses made of his writings. Grosseteste was cited frequently by John Wyclif and his followers as they tried to take the pastoral care of the laity out of the hands of a church they saw as irredeemably corrupt (On Simony 97). Wyclif’s view of the condition of the church was far more radical than Grosseteste’s view. Grosseteste, while recognizing the corruption that had developed within the Church, felt that it could still be reformed from within. Nevertheless, Grosseteste’s letter of 1253 refusing to give a canonry to a nephew of Innocent III who was not qualified for the position was cited several times by Wyclif to justify resistance against the corruption of the papacy (On Simony 164). Grosseteste’s work De cessatione
legalium was cited by Wyclif to support his contention that the church hierarchy and
many of its rules and customs subverted God’s law and the true purpose of the church,
which was the spiritual care and education of all Christians: “Et ita concedo, quod
status, statuta, et ritus adiecti secundum tradiciones humanas omnes inseparabiliter
peccatum sapiunt, cum dei legem difficultant et impedunt cursum sermonis sui, ut patet
in De Cessacione Legalium” (Iohannes 50–51). “And so I concede that ranks, statutes,
and rites that have been added in accordance with human customs, all, without
distinction, smack of sin, since they endanger God’s law and impede the teaching of his
word, as is clear in De cessatione legalium” (On Simony 92). Wyclif supported both of
these arguments by citing Grosseteste’s sermon at the Council of Lyons in 1250:

Ideo dicit Lincolniensis in quodam sermone ad papam, post-quam
numeravit defectus in cura pastoralis officii: “Cum,” inquit, “religiosis fit
ecclesiarum parrochialium appropriacio pretactorum malorum firma est
perpetuacio,” quia malis pastoribus temporalibus aliquando succedere
potuerunt qui opera peragant officii pastoralis. (Iohannes 88)

Thus after listing defects in the performance of the pastoral office, the
bishop of Lincoln says in a certain sermon to the pope: “When there is an
appropriation of parish churches by religious, there is a solidifying and
perpetuating of the evils that we have discussed before,” because
sometimes they bring in bad pastors to perform the works of the pastoral
office temporarily. (On Simony 136)

When the Lollard movement began circulating “Glossed Gospels” written in English,
Grosseteste was often included in the list of “olde doctours” considered acceptable
authorities in scriptural interpretation:
For this cause a sinful caytif [caitif], hauynge compassioun on lewed men, declarith the gospel of Mathew to lewed men in Englische, with exposicioun of syntis and holy writ, and allegith onely holy writ and olde doctours in his exposicioun, as Seynt Austyn, Seynt Ierom, Seynt Gregor, Seynt Ambrose, Seynt Crisostom, Seynt Bernard, Grosted [Grosseteste] and olde lawes of seyntis and of holy chirche wel grounded in holy writ and resoun [. . .] (Copeland 133)

Grosseteste’s authority within the Lollard movement lasted into the sixteenth century, as demonstrated by the Testimony of William Thorpe (c. 1407, new editions published as late as 1570) (Hudson xxxv, lii):

And herfore seiþ Lyncoln “þat prest þat prechiþ not þe word of God, þou þe be seen to haue noon oþer [de]faute, he is antecrist and sathanas, a niþt þeef and a dai þeef, a sleer of soulis and an aungel of liþt turned into derknesse.” (Thorpe 50)

But forþi þat manye preestis contrarien now Poul in þis forseid lore, Poul biddeþ take heede to [þo] prestis þat suen him as he haþ ouun to hem ensaumple, as if Poule wolde seie þus to þe peple “Accepte þe noon oþer preestis þan hem þat lyuen aftir þe fourme þat I haue tauþte þou; for certis, in whateuer dignite or ordre þat ony preest is, if he conforme him not to sue Crist and hise apostlis in wilful pouerte and in oþer heuenly vertues, and specialli in trewe prechinge of Goddis word, þou such oon be | nempned a preest, he is no but a prest in name, for þe work and þe vertue
of a very preest such oon lackip.” Þis sentence appreueþ Austyn, Gregor, Crisostem and Grossthede pleynli. (Thorpe 68–69)

Although Grosseteste’s optical works had a short-lived influence, being superseded by those of the perspectivists, his inclusive theology, which was supported by his theoies of light, helped shape theological evolution for several centuries after his death.

The Revelation of the Monk of Eynsham

The late twelfth century Visio Monachi de Eynsham and its late fifteenth century English translation The Revelation of the Monk of Eynsham provide interesting examples of the continuing theological interest in light and in the spiritual well being of the laity. The Visio is believed to be an account of the vision of a monk named Edmund written by his brother Adam. Edmund was likely born in Oxford around 1169, by which time Gothic architecture was being incorporated into Christ Church Cathedral, so that Edmund would have grown up worhipping in an atmosphere that was at least partially Gothic in nature (Easting xxxvi, xli; King 8–9). From 1209 until 1213, Adam traveled outside England, staying for a while in Paris (Easting xxxvii). Edmund’s vision of the afterlife contains some traditional elements, such as dividing purgatory into three sections and grouping similar sins together for appropriate punishment (Easting lxxxvii-lxxxviii), but there are some features that would not become common until after Edmund’s time. Rather than seeing just groups of anonymous sinners or well-known figures, Edmund sees people he knew when they were alive, such as an alcoholic goldsmith he speaks to at length in the first section of purgatory (Capitulum XIX-XXIII in both the Latin and the English). Edmund shares the histories of the people he recognizes and expresses sympathy for their suffering and joy when learning that they are working their way
toward heaven (Easting lxxxv). Another interesting feature of Edmund’s vision is that the punishments are not assigned solely according to the nature of the sin. The sinner’s level of knowledge and sophistication is also taken into account, with the harshest punishments reserved for educated men who ought to have known better. As Robert Easting put it, “The harshest torments and criticisms are for mighty prelates who abuse their power and neglect the cure of souls in their charge, but the drunken goldsmith and the prostitute are saved by their devotion to their favourite saints, and by their humility” (xcii). When Edmund reaches heaven, he describes the celestial city as being filled with “a brilliant light, which sharpens and fits one’s power of sight to see it, much as the light in Dante’s \textit{Paradiso} strengthens his sight” (Easting xcv). The city is surrounded by a wall of crystal, the height and length of which are beyond the limits of human perception (\textit{Revelation} 160–161). The increasing height and progressive replacement of stone with glass in Gothic church walls would find their ultimate achievement in a crystal wall so high no human could see the top.

Post hec redeunte fiducia crux cessit & intraui. Quantus uero inestimabilis fulgor claritatis, quanta luminis gracia interius vniuersa possedierit, a me nemo requirat. Hoc enim non uerbis promere, sed nec mente sufficia recordari. Splendor ille choruscus & blandus, serenus & lenis, sic intuentem rapiebat in se, sic notoris immensitate ferebar super se, ut nichil in eius comparacione crederem esse, quicquid | eatenus me contigit uidisse. Splendor iste quamlibet ineffabilis, quamlibet inestimabilis, tamen non reuerberabat sed pocius acuebat obtutum. Micabat quidem ineffabiliter sed multo inestimabilius enspicientem demulcens, uisioni sue mirabiliter captatbat. (\textit{Revelation} 162)
And aftyr thys, my hope and truste came ageyne, and the crosse was lyfte vppe, and so Y cam in. But what brightnes and clerenes of light was there within-forthe al aboutys, no man aske ne seche of me, for Y can-not only telle hit by worde, but also Y can-not remembre hit in mynde. That glorious schyning light was brighte and smothe, and so raueshte a man that behylde hit, that hit bare a man aboue hym-selfe by the grete brightnes of lyghte, yn so mekyl that what-sum-euer Y sawe before, hit was as no-thing, me thought, in comparyson of hit. That bryghtnesse, thawghe hyt were inestymable, neuerthelessse, hyt dullyd not a mannys syghte, but rather scharpyd hyt. | Sothly, hyt schynyd ful meruelusly, but more ynestymably, hyt delytyd a man that behylde hyt, and wondirfully cowpulde a mannys syghte to se hit. (Revelation 163)

As is typical of visions of the afterlife, Edmund’s human mind is not capable of a full understanding of the divine, but God’s illumination has allowed him to see as much as possible while he still lives:

“As is typical of visions of the afterlife, Edmund’s human mind is not capable of a full understanding of the divine, but God’s illumination has allowed him to see as much as possible while he still lives:

“En,” inquit, “uel ex parte iam, fili, ut petisti & nimio desiderio concupisti, seculi future statum, pericula errancium, supplicia peccatorum, purgatorum quietem, tendencium desideria, gaudia eorum qui iam ad celi curiam perueniunt, passionis dominice misteria, & Christi iam regnantis gloriam, ut tibi possibile fuit, conspexisti. Iam tibi ad tuos & ad seculi pugnas est redeundum. Percipies autem si perseueraeris in timore Domini bona que oculis conspexisti & multo his maiora, que solus uidere merebitur, qui sine fine illa possidere dignus erit.” (Revelation 164)
“Loo, sonne,” he seyde, “now a party aftyr they peticion and grete desir thow haste seyne and beholde: the state of the worlde þat ys to cumme, as hyt myghte be to [the] possible; also the peresls of hem that offendyn and erryn; the peynys of sinners; the reste also of hem þat haue done her purgacion; the desyrys | of hem that be goyng to heuynward and the ioyss of hem that now byn cumme to the courte of heuyn; and also the ioy of Crystis reynnynge.  And now thow muste go ageyne to they-selfe, and to thyne, and to the worldys feyghtyng.  Treuly, thow schalt haue and perceue the ioyys that thow haste seyne and mekyl more, þeffe thow contynew and perseuer yn the drede of God.” (Revelation 165)

The themes of divine illumination and of the need to reform the church to focus on the spiritual well being of the laity resonated strongly enough with the educated audience of the Visio that the work was translated for a lay audience three centuries after its initial composition.

The York and Towneley Cycle Plays

The late fourteenth century cycle plays of York and Wakefield (Towneley), performed by and for the laity within view of York Minster and Wakefield Cathedral, use divine light as an image of the promise of salvation. These plays served to provide uneducated audiences with religious instruction and guidelines for earning salvation. In the Towneley plays, Christ is identified with divine illumination from the time of his conception, using an architectural metaphor: “And as the son shynys thorow the glas, / Certys, in hir wombe so dyd hir child” (“John the Baptist” 19–20). Mary is described as being “as clene as cristall clyfe” (“The Annunciation” 308). Throughout the plays, those
who recognize divine light and act on this recognition are saved while those who do not are damned (Tamburr 144). For example, the Roman soldiers who torment Jesus see the divine light in his face but ignore it:

Do pull hym a-rase / whyls he be ganging;
I shall spytt in his face / though it be fare shynyng;
Of vs thre gettys thou no grace / thi dedys ar so noyng,
Bot more sorow thou hase / oure myrth is incresyng,

No lak. (“The Scourging” 71–75)

At caluery when he hanged was,
I spuyed and spyt right in his face,
when that it shoyn as any glas,
so semely to my sight;
Bot yit for all that fayr thing,
I loghe hym vnto hethyng,
And rofe of his clethyng;

To me it was full light. (“The Talents” 81–88)

In contrast, the souls in hell who are to be saved immediately recognize the divine light and know its significance. Christ announces his pending arrival in hell with a divine glow: “A light I will thay haue / To know I will com sone” (“The Deliverance of Souls” 21). Upon seeing the light, Adam and Eve know their salvation is near:

Now se I tokyns of solace sere,

A gloyous gleme to make vs glad,

Wher thrugh I hope that help is nere,
That sone shall slake oure sorowes sad.

_Eva._ Adam, my husband heyned,
This menys solace certan;
Sich light can on vs leynd
   In paradyse full playn. (“The Deliverance of Souls” 29–36)

Isaiah recognizes the divine light as the fulfillment of a prophesy he made:

_I spake of folke in darknes walkand,
 I saide a light shuld on theym lende;
This light is all from crist commande
   That he till vs has hedir sende,
Thus is my poynt proved in hand,
   as I before to fold it kende. (“The Deliverance of Souls” 47–52)

Moses recognizes the divine light as the same light he saw at the Transfiguration:

_Now this same nyght lernyng haue I,
 to me, moyses, he shewed his might,
And also to anothere oone, hely,
   where we stud on a hill on hyght;
As whyte as snaw was his body,
   his face was like the son for bright,
Noman on mold was so myghty
   gralthly durst loke agans that light;
And that same light here se I now
   shynyng on vs, certayn,
where thrugh truly I trow
that we shall sone pas fro this Payne.

(“The Deliverance of Souls” 77–88)

The devils, on the other hand, refuse to recognize the divine light even when it is pointed out to them and its source identified:

David. Nay, with hym may ye not fyght,
    ffor he is king and conqueroure,
And of so mekill myght,
    And styf in euery stoure;
Of hym commys all this light
    that shynys in this bowre;
he is full fers in fight,
    worthi to wyn honoure.
Belzabub. honowre! harsto, harlot, for what dede?
    Alle erthly men to me ar thrall;
That lad that thou callys lord in lede
    he had neuer harbor, house, ne hall.

(“The Deliverance of Souls” 128–39)

The defining characteristic that identifies those who will gain salvation has nothing to do with wealth, station, or education. In order to be saved, a person needs to follow God’s law and be willing to recognize God’s light and allow it to change his or her life.
William Langland’s *Piers Plowman* (c. 1362-1399), written during the transitional period of English Gothic architecture from the Decorated to the Perpendicular style, is filled with such traditional elements as the seven corporal works of mercy (C.7.21), the seven Christian virtues (C.7.270), the seven gifts of the Holy Ghost (C.21.228a-249), and the four cardinal virtues and three theological virtues (C.21.274). *Piers Plowman* also contains adaptations of elements found in Grosseteste’s *Chasteau d’Amour* and the cycle plays. In Passus 7 of the C-text, Langland uses a castle allegory in the same tradition as Grosseteste’s in the *Chasteau d’Amour*, though Langland’s castle represents Truth (God) rather than the Virgin. If the dreamer is able to dwell within Truth/God, he will find that Truth/God dwells within him and he will be able to guide others to the Castle of Truth (232–60a):

> And yf Grace graunte the to go in in this wyse  
> Thow shalt se Treuthe sitte in thy sulue herte,  
> And solace thy soule and saue the fram payne,  
> And charge Charite a churche to make  
> In thyne hole herte, to herborwe all trewe  
> And fynde alle manere folke fode to here soules,  
> 3ef loue and leute and oure lawe be trewe:

> *Quodcumque petieritis in nomine meo, dabitur enim vobis.* (254–60a)

While Grosseteste’s dreamer expresses a desire to enter the castle (*Chasteau d’Amour* 787-818, *Castell off Loue* 881-910), Langland’s dreamer is directed to the castle with the express purpose of entering it, which would seem to indicate an improved chance of success.
In Passus 20 of the C-text, Langland includes a version of the Four Daughters allegory. While Grossesteste positioned this allegory just before the Incarnation, Langland places it between the Crucifixion and the Harrowing of Hell (C.20.116–238). As in the *Chasteau d’Amour*, Langland’s daughters represent the Old Law (Truth, Justice) and the New Law (Mercy, Peace) and debate the issue of forgiveness for original sin. During this debate, Mercy places the greatest blame for original sin with Satan’s trickery rather than with humankind:

Thenne Mercy fol myldely mouthed this wordes:

“Thorw experiencia,” quod she, “y hope they shal ben saued;
For venym fordoth venym, þer feche y euydence
That Adam and Eue haue shullen bote.
For of alle fretynge venymes the vilest is the scorpioun;
May no medecyne amende the place there he styngeth
Til he be ded and do þerto, and thenne he destruyeth
The verste venemousthe thorw vertu of hymsulue.
And so shal this deth fordo, y dar my lyf legge,
Al þat Deth and þe deuel dede formost to Eue.
And riht as the gylour thorw gyle bigiled man formost,
So shal grace, þat bigan al, maken a goed ende
And bigile þe gilour, and þat is a goed sleythe:

*Ars vt artem falleret.* (C.20.153–65a)

Since human nature was poisoned through trickery, it can be redeemed only through trickery, by God masquerading as an ordinary man. Human nature is not inherently wicked, and it is not irredeemable, since the poison has an antidote. The antidote is
difficult to produce, but the restoration of creation to God’s original intent is worth the trouble. As in the *Chasteau d’Amour*, the conclusion of the debate is that balance must be restored to creation by reconciling humanity with God.

Following the debate of the Four Daughters, Christ descends into Hell to free virtuous souls in a scene that borrows many of the same details from the Gospel of Nicodemus as did the cycle plays. Christ’s arrival at the gates of Hell is preceded by divine light:

A vois loude in þat lih t to Lucifer saide:

“*Princepes* of this place, prest vndo this gates,
For here a cometh with croune, þe kynge of all glorie!”

[..............................]

Patriarkes and prophetes haen parles herof longe

That such a lord and a lihte shal lede hem all hennes. (C.20.271–80)

Langland does not include a description of the virtuous souls recognizing the light. Instead, he describes some of the devils recognizing the light—“‘Lustneth,’ quod Lucifer, ‘for y this lord knowe; / Bothe this lord and this lihte, ys longe ygo y knewe hym” (C.20.295–96)—and deciding to hide from it:

“And now y se where his soule cometh sylinge hidward
With glorie and with gret lihte—god hit is, ich woet wel.
Y rede we flee,” quod the fende, “faste all hennes,
For vs were bettere nat to be then abyde in his sihte. (C.20.341–44)
Astarot and alle oþer hidden hem in hernes;
They dorst nat loke on oure lord, the lest of hem alle,
Bote leten hym lede forth which hym luste and leue which hym likede. (C.20.447–49)

God’s light brings salvation to the virtuous souls. The devils will never know what God’s light might have brought them, because they rejected God’s light again and hid in the darkness.

The theory that Satan’s trickery must be answered with God’s trickery depends on the notion that Satan will not recognize Christ as God incarnate until he tries to claim Christ’s soul. Langland uses the language of this theory but undercuts it by having Gobelyn recognize Christ’s light before the Crucifixion. Gobelyn tells the other devils that he initially tried to postpone the Harrowing of Hell by sending a dream to Pilate’s wife warning against making Christ a martyr. However, Christ’s activities in life were leading too many souls to salvation, and Gobelyn decided that, in the long run, it was better to lose a few souls to the Harrowing and have Christians left without Christ’s living example to help them save themselves in the future:

Thus hath he trolled forth like a tydy man this two and thritty wynter;
And when y seyth hit was so, y sotiled how y myhte Lette hym þat louede hym nat, laste they wolde hym martre.
Y wolde haue lenghed his lyf, for y leued, yf he deyed, That if his soule hider cam hit shoulde shende vs all. For þe body, whiles hit on bones þede, aboute was hit euere To lere men to be lele and vch man to louye oþer;
The which lyf and lawe, be hit longe y-vysed,
Hit shal vndo vs deueles and down bryngen vs all.” (C.20.332–40)

Instead of using recognition of divine light as the defining characteristic of a soul that can be saved, as in the cycle plays, Langland allows everyone to recognize the light but shows the devils either hiding from it or misunderstanding the nature of the power it represents, as when Satan assumes that Christ can defeat Hell only by leading troops against it in a cavalry charge and plans to shoot Christ’s troops and lame his horses:

Setteth bowes of brake and brasene gonnes
And sheteth out shot ynow his sheltrom to blende.
Set Mahond at þe mangenel and mullestones throweth
And with crokes and kalketrappes acloye we hem vchone! (C.20.291–94)

Langland also uses light alongside the flesh and blood of Christ as a tool of salvation:

“The sonne for sorwe þerof lees liht for a tyme, / Aboute mydday, when most liht is, and mel-tyme of sayntes; / Feddest tho with thy flesch and blood oure forfadres in helle” (C.7.132–34). As Mabel Day pointed out, the “mel-tyme of sayntes” is a possible reference to a scene in St. Patrick’s Purgatory (late twelfth century):

Me þenkeþ it is a þousandfold
Briȝter þan euer was ani gold,
Bi siȝt opon to se."
“ȝa,” seyd þe bischop to þe kniȝt,
“Þat ich stede, þat is so briȝt,
Nis bot þe entre.
And ich day ate gate o siþe
Ous comeþ a mele to make ous bliþe,
Þat is to our biheue:
A swere smal of al gode,
It is our soule fode.
Abide, þou schalt ous leue.” (“Owayne Miles (OM1)
Auchinleck” 181–82)

The souls who have passed through purgatory and are waiting in the earthly paradise for
entry into heaven are fed once a day by the divine light that shines through the entrance
to heaven when the gates open to admit worthy souls. Divine light, even from a
distance, is all the sustenance these souls need to endure. Just the glow from the closed
gates is so bright that the dreamer is dazzled by it.

In his most potentially radical theological statement, Langland flirts with the
unorthodox doctrine of universal salvation in Christ’s reply to Lucifer’s challenge at the
Harrowing of Hell:

  Hit is nat vsed on erthe to hangen eny felone
  Oftur then ones, thogh they were tretours.
  And yf þe kyng of þe kyngdoem come in þe tyme
  Ther a thief tholie sholde deth oþer iowyse,
  Lawe wolde he ȝoue hym lyf and he loked on hym.
  And y þat am kynge ouer kyngesshal come such a tyme
  Ther þat doem to þe deth dampneth alle wikkede,
  And if lawe wol y loke on hem hit lith in my grace
  Where they deye or dey nat, dede they neuere so ille.
Christ seems to say that in the afterlife, as on earth, no criminal will be condemned twice for the same crime. It is within God’s power to restore even the devils to heaven if he wishes, despite their treachery, as Origen (c. 185-254) proposed in his *De Principiis*:

The end of the world, then, and the final consummation, will take place when every one shall be subjected to punishment for his sins; a time which God alone knows, when He will bestow on each one what he deserves. We think, indeed, that the goodness of God, through His Christ, may recall all His creatures to one end, even His enemies being conquered and subdued. For thus says holy Scripture, “The Lord said to My Lord, Sit Thou at My right hand, until I make Thine enemies Thy footstool.” And if the meaning of the prophet’s language here be less clear, we may ascertain it from the Apostle Paul, who speaks more openly, thus: “For Christ must reign until He has put all enemies under His feet.” But if even that unreserved declaration of the apostle do not sufficiently inform us what is meant by “enemies being placed under His feet,” listen to what he says in the following words, “For all things must be put under Him.” What, then, is this “putting under” by which all things must be made subject to Christ? I am of opinion that it is this very subjection by which we also wish to be subject to Him, by which the apostles also were subject, and all the saints who have been followers of Christ. For the name “subjection,” by which we are subject to Christ, indicates that the salvation which proceeds from
Him belongs to His subjects, agreeably to the declaration of David, “Shall not my soul be subject unto God? From Him cometh my salvation.”

(Origen 4: 260)

Langland may not be fully committed to this doctrine, mitigating Christ’s statement with the phrase “if lawe wol” (C.20.428), but this seems to be a half-hearted mitigation.

Cindy L. Vitto believes that the fact that souls were left behind in the Harrowing “lessens the liklihood of universal salvation at the Last Judgment as well” (84), but the doctrine of universal salvation does not refer to the Harrowing. The souls who were ready to be released from hell at the Harrowing were led out by Christ. The rest must wait in hell until the Last Judgment. “A while longer” and “eternally” are vastly different time frames, and on the whole, Christ’s speech seems to support “a while longer.” God’s mercy seems likely to be absolute in the end, though it is still far preferable to follow the path toward God in life and avoid hell altogether.

In another break from orthodoxy, Langland modified the legend of Emperor Trajan so that baptism was no longer the means of his salvation. The earliest forms of the legend did not involve baptism—Trajan’s soul was released from hell because of the prayers of Pope Gregory. Trajan’s body was never found, reanimated, or baptized in these early stories. Eventually, variations developed in which part or all of Trajan’s body is discovered and asks for help. Gregory baptizes Trajan, and Trajan is saved—or at least removed from the inner regions of hell (Vitto 42). \textit{St. Erkenwald} (c. 1386) is an orthodox version of the legend that is contemporary with \textit{Piers Plowman}. The lawyer’s just actions in life allow him to be preserved for the miracle of his salvation, but salvation is accomplished through baptism by Bishop Erkenwald (Vitto 58). Langland returns to the original form of the legend, in which Trajan entered heaven without benefit of
baptism: “Traianus was a trewe knyght and took neuere Crystendome, / And he is saf, seith the bok and his soule in heuene” (C.15.205–06). Trajan’s salvation in the B-text is prayed for by Gregory but is due entirely to his own merit: “Nouȝt thorw preyere of a pope but for his pure treuth / Was the Sarasene saued as seynt Gregorie bereth witnesse” (B.11.150–51). The C-text omits these two lines, restoring Gregory’s prayer as the immediate cause of Trajan’s salvation, but Trajan is never converted to Christianity: “Loue withoute lele bileue as my lawe rihtfoel / Saued me, Sarrasyn, soule and body bothe” (C.12.85–86). Despite remaining a pagan, Trajan is taken into heaven, not just into Limbo or the outer circle of hell. Although Langland’s version of the legend has precedent, it is a striking break from orthodoxy in a time when Wyclif and his followers were inciting debate about the efficacy of sacraments. Allowing Trajan to enter heaven without baptism illustrates the possibility for a direct relationship between God and any individual, without the mediation of the church. Restoring the efficacy of Gregory’s prayer pulls Langland’s theology back from the brink of Lollardy but does not detract from the efficacy of Trajan’s good works.

Langland shared with Grosseteste a great desire to reform the church from within to restore it to what both saw as its primary purpose—the spiritual care and education of all Christians. Grosseteste’s complaints about the problems in the church placed greatest emphasis on clerical duties being given to those who were not qualified to perform them. Langland’s complaints included the same problem but placed greatest emphasis on traveling friars usurping duties that could better be performed by a stable clergy. The friars, having no means of support from the church, began supporting themselves by selling their clerical services, particularly confession and penance: “I fonde þer of freris alle þe foure ordres, / Prechyng þe peple for profyt of þe wombe,” (C.P.56–57).
Properly performed confession and penance are the primary means the laity have of regulating their lives so that they can avoid damnation. Payment to a friar, rather than introspection and true penitence, will not guide anyone closer to God. Nor will the paid prayers of strangers serve as an adequate substitute for the prayers of loved ones to shorten a soul’s stay in purgatory:

And euele is this yholde in parsches of Yngelond,
For persones and parsche prestes, þat sholde þe peple shryue,
They ben curatours cald, to know and to hele,
Alle þat been here parschiennes penaunses enioynen
And be aschamed in here shryft; ac shame maketh hem wende
And fle to þe freres, as fals folk to Westmynstre,
That borweth and bereth hit theddere and thenne biddeth frendes
ζerne of forζeuennesse or lengore ζeres leue.
Ac while he is in Westmynstre he wol be before
And maken hym murye with opere men biswonke,
And so hit fareth with moche folke þat to freres shryuen,
As sisours and secutoures; they shal ζeue þe freres
A parcel to preye for hem, and make hem merye
With þe remenaunt that opere men biswonke,
And soffren þe dede in dette to þe day of dome. (C.22.279–94)

When confession, penance, and prayers for souls in purgatory become paid services, the only payment goes to the friars, not to God to satisfy the debt of sin. People go about their lives believing their debt to God is being paid, when actually it is only increasing. Then when their unpaid debt puts them in purgatory, they are left until the Last Judgment
by prayers that also do not repay the debt. This subversion of clerical duties causes the church to fail entirely in its duty to too many Christians. Simple folk who have not been taught otherwise cannot be expected to understand that the method used by the friars doesn’t work, so it is up to those who do understand to educate the laity and reform the practices of the church so that their purpose is truly served. Langland’s solution to the problem of friars is not to eliminate them, but to reform the system so that they have a stable, sufficient living and no longer need to sell their services in order to survive: “And þat freres hadde a fyndynge, þat for nede flateren / And countrepledeth me” (C.22.383–84). The living provided to friars, as to everyone, should be one of moderation—excess as well as excessive deprivation will lead to disordered affections: “Mesure is medecyne, thogh þow muche Ʒerne” (C.1.33). Langland’s suggested reforms in the church and in secular society are aimed at restoring a feudal ideal—a system of mutual obligation among the various segments of society modeled after the system of mutual obligation between God and humanity demonstrated in the Incarnation, Harrowing of Hell, and Last Judgment.

One additional point of similarity between Langland and Grosseteste is the use of Langland’s work to support causes more radical than his writing would actually support. John Ball, one of the leaders of the Peasant’s Revolt of 1381, appropriated several passages from *Piers Plowman* and used them out of context to support his calls for violent revolt (Justice 104–11). Names from the poem were also used as code-names for the organizers of riots (Jusserand 189–90). Langland’s call for a return to a feudal system of mutual obligation is clearly antithetical to violent clashes between social classes, but that fact did nothing to curb the misuse of Langland’s work. Nor did his clear desire for reform from within the church prevent his long-standing identification as
a follower of John Wyclif. John Bale, in his *Catalogue of Illustrious Writers* (c. 1557), described Langland as one of Wyclif’s first disciples:

> Illud uerumtamen liquido constat eum fuisse ex primis Ioannis Vuicleui discipulis unum atque in spiritus feroore, contra apertas Papistarum blasphenias aduersus Deum et eius Christum sub amoenis coloribus et typis edidisse in sermone anglico pium opus, ac bonorum uirorum lectione dignum, quod uocabat Visionem Petri Aratoris. (qtd. in Jusserand 60)

Thomas Fuller, in his *History of the Worthies of England* (1662), wrote a more favorable but equally inaccurate description of Langland:

> ROBERT LANGELAND. Forgive me, reader, though placing him (who lived one hundred and fifty years before) since the Reformation; for I conceive that the morning-star belongs rather to the day than to the night. On which account this Robert (regulated in our book, not according to the age he was in, but judgment he was of) may by prolepsis be termed a Protestant.

> He was born at Mortimer’s-Clibery in this county, eight miles from Malvern Hills; was bred a priest, and one of the first followers of John Wickliffe, wanting neither wit nor learning, as appears by his book called “The Vision of Pierce Plowghman;” [. . .] (Fuller 3: 64)

Some of the revisions Langland made to the C-text appear to be an attempt to distance *Piers Plowman* from the teachings of Wyclif. The role of Rechelesnesse is greatly expanded, and speeches endorsing the Wyclifite doctrines of predestination, priestly poverty, and disendowment of the church are reassigned from the dreamer to Rechelesnesse (C.11.205–10, 12.98–101a, 13.78–104). These revisions join statements
by Imaginatyf and Free Will disputing the Wyclifite doctrine that sacraments performed by tainted priests are invalid (B.12.123–24, 15.380–82; C.14.64–65, 17.119–21).

Despite these changes and the clear desire for internal reform of the church, Langland’s belief that each individual can be saved through his or her own efforts, possibly without the mediation of the church, meant that he would not escape association with Lollardy for several centuries. Though his influence may not have been quite what he intended, Langland did continue to have an influence, even surviving the censorship of Arundel’s Constitution, at least among the upper classes (Watson 835).

The *Pearl*-Poet

In the writings of the *Pearl*-poet (late fourteenth century) we find elements of neoplatonism, architectural imagery, and a humanization of characters who are usually much more two-dimensional. The most extensive architectural description, of course, is that of the walled city of New Jerusalem in *Pearl*. *Sir Gawain and the Green Knight* contains a shorter but no less detailed description of Bertilak’s castle:

The walle wod in the water wonderly depe
And eft a ful huge hyght hit haled upon loft,
Of hard hewen stone up to the tables,
Enbaned under the abataylment in the best lawe,
And sithen garytes ful gay gered bitwene,
Towres telded bitwene, troched ful thik,
Fayr fylyoles that fyed and ferlyly long,
With corven coprounes craftily sleye.
Chalkwhyte chymnees there ches he innowe,
Upon basted roves that blenked ful white.
So mony pynacle paynted was poudred aywhere,
Among the castel carneles clambred so thik,
That pared out of papure purely hit semed. (786–802)

Ann R. Meyer sees this castle both as a typical late-medieval castle and as a delicate model that evokes the Gothic micro-architecture described by François Bucher (159–60). Gothic micro-architecture, according to Bucher, was inspired by literary descriptions of architectural wonders that could never be built as full-scale buildings (72). On a smaller scale, however, craftsmen could design structures to rival the literary wonders, sometimes using stone but often using precious metals and gemstones. Altar screens, tombs, and tabernacles were designed with such delicate and heavily carved supports that full-scale versions of the structures would collapse under their own weight (74). Meyer believes that reciprocal inspiration can be seen in the description of micro-architecture in Cleanness (160–62). There is a distinct architectural character to Balthazar’s table decorations and to the liturgical vessels he has tainted by using them as tableware:

Lyfte logges þer-ouer & on lofte coruen,
Pared out of paper & poyneted of golde;
Broþe baboynos abof, besttes an-vnder,
Foles in foler flakerande bi-twene,
& al in asure & ynde enaumayld ryche;
& al on blonkkeu bak here hit on honde (1407–12)

Houen vpon þis auter watʒæbel vessel,
Þat wyth [s]o curious a crafe coruen watʒ wyly.
For þer war bassynes ful brende golde clere,
En-aumaylde wyth a3er, it eweres of sute,
Couered cowpes foul clene, as casteles arayed,
En-baued vnder batelment wyth bautelles quoyst,
& fyled out of fygures of ferlyle schappes.
Be coperounes of þe e[o]uacles þat on þe cuppe[s] rere,
Wer fetysely formed out in fylyoles longe;
Pinacles py3t þer apert þat profert bitwene,
& al bolled abof wyth braunehes & leues;
Pyes & papeiayes purtrayed with-inne,
As þay prudly hade piked of pom-garnades,
For alle þe blomes of þe bo3es wer blyknande perles,
& alle þe fruyt in þo formes of flaumbeande gemmes,—
Ande safyres & sardiners & semely topace,
Alabaunda-rynes & amaraun3 & amafliised stones,
Casydoynes & crysolytes & clere rubies,
Penitotes & pynkardines, ay perles bitwene;
So trayled & tryfled a trauerce wer alle,
Bi vche bekyr ande bol[l]e, þe brurdes al vmbe;
Be gobelotes of golde grauen aboute,
& fyoles fretted wyth flores & flee3 of golde;
Vpon þat avter wat3 al aliche dresset. (1451–77)
In addition to being made with many of the same architectural details as castles and churches, these vessels are encrusted with shining precious materials that call to mind Abbot Suger’s decoration of St.-Denis. I believe we can safely assume that the *Pearl*-poet did not endorse the disendowment of the church. Properly viewed, the gemstones and precious metals transport one’s mind to the ineffable brightness of God. This neoplatonic view is supported by the description of the dream landscape in *Pearl* (Meyer 141):

Dubbed wern alle þo downeȝ sydeȝ
Wyth crystal klyffeȝ so cler of kynde.
Holtewodeȝ bryȝt aboute hem bydeȝ,
Of bolleȝ as blew as ble of ynde.
As bornyst syluer þe lef onslydeȝ,
Þat þike con trylle on vch a tynde.
Quen glem of glodeȝ agaynȝ hem glydeȝ,
Wyth schymeryng schene ful schrylle þay schynde.
Þe grauyl þat on grounde con grynde
Wern precious perleȝ of Oryente,
Þe sunebemeȝ bot blo and blynde
In respecte of þat adubbement. (73–84)

The dubbemente of þo derworth depe
Wern bonkeȝ bene of beryl bryȝt.
Swangeande swete, þe water con swepe
Wyth a rownande rourde, raykande aryȝt.
In þe founce þer stonden stoneȝ stepe,
As glente þurȝ glas þat flowed and glyȝt,
A stemande sterneȝ, quen stroþe-men slepe,
Staren in welkin in winter nyȝt;
For vche a pobbel in pole þer pyȝt
Watȝ emerad, saffer, ôþer gemme gente,
Þat alle þe loȝe lemed of lyȝt,
So dere watȝ hit adubbement. (109–20)

The dream landscape of *Pearl* has been constructed by a silversmith and encrusted with jewels, a macro-architectural landscape for the tabernacle of the New Jerusalem. Meyer sees the gem-filled stream as a sort of altar screen separating the dreamer from the truth he is not yet capable of perceiving (149). The physical descriptions in *Cleanness* and *Pearl* demonstrate that time spent inside a Gothic church can inspire the sort of neoplatonic ecstasy in a poet that Abbot Suger expressed when describing his newly rebuilt church.

One of the most outstanding features of *Pearl* is its complex structure, which has often been described as architectural (Vantuono xxvi-xxvii; Meyer 166). The pattern of concatenation within the overall circularity of the poem combined with the numerical pattern—twelve lines within five stanzas within twenty groups plus a sixth stanza added to the fifteenth group to make a total of 1212 lines—creates a structural web that rivals the most elaborate Gothic carving. Meyer likens the concatenation to Gothic window tracery and the series of linked stanzas to interconnected vault bays (178).
Light imagery, associated with the imagery of precious metals and gems, also pervades *Pearl*. The dreamer says that the sun is dark compared to the dream landscape (83–84) and that the gem-filled stream glows with the light of the gems (119). The walled city of New Jerusalem is more brilliant than the sun (982) and glistens with more precious metals and stones (989–1032) and twelve perfect pearls (1034–38). God’s light illuminates the city so that the sun and the moon are superfluous (1045–47). The river flowing from God’s throne is also brighter than both the sun and the moon (1055–58). The sight of the city leaves the dreamer stunned, ravished by pure spiritual light (1083–88). The reflective surfaces of precious metals and stones catch and disperse the glow of God’s light, just as the reflective surfaces within a properly decorated Gothic church catch and disperse the physical light that passes through the glass walls, symbolizing God’s light.

The poems of the *Pearl*-poet incorporate not only the metaphysical light imagery that had been gaining popularity since the twelfth century, but also the concern for the spiritual well being of the laity that had been growing since the Fourth Lateran Council. The focus of *Pearl* and *Sir Gawain and the Green Knight* is the salvation of a single soul, and while *Cleanness* and *Patience* deal with the salvation or damnation of large populations, the poems for the most part deal with the relationships between God and individual Christians. *Sir Gawain and the Green Knight* also makes the point that an individual’s feeling of contrition is more important to an effective confession and penance than the formality of the sacrament (Clark and Wasserman 15). If confession and penance have been effective, the penitent’s behavior is changed for the better. Gawain’s confession to the priest (1876–84) effects no such change, but his unorthodox confession to Bertilak (2338–406) brings him the humility and seriousness that would
have allowed him to pass Bertilak’s challenge unscathed. Gawain’s attempt to share his experience with the court at Camelot shows that the individual experience of salvation is not transferable to others (Clark, et al. 15):

The kyng comfortes the knight, and all the court als,
Laghen loude therat and lovelyly acorden
That lordes and ledes that longed to the Table,
Uch burn of the brotherhede, a bauderyk schulde have,
A bende abelef him aboute of a bryght grene,
And that for sake of that segge in sute to were. (2513–18)

The court has gained neither humility nor seriousness from Gawain’s account, so the green baldrics they intend to wear will be meaningless.

A further expression of the importance of the individual in the poems of the Pearl-poet is the humanization of characters that are often depicted as two-dimensional types rather than realistic people (Rhodes 91–140). When the king in the parable of the Wedding Feast confronts the improperly clothed man, the man’s reaction is described this way in the Bible: “And he was speechless” (Matt. 22:12). The version of the parable in Cleanness contains a greatly expanded description:

Þat oþer burne watȝ abayst of his broþe wordeȝ,
& hurkeleȝ doun with his hede, þe vrþe he bi-holdeȝ;
He watȝ so scoumfit of his scylle, lest he skaȝe hent,
Þat he ne wyst on worde what he warp schulde. (149–52)

The man in this expanded version is someone we feel sorry for, and the king’s behavior comes across as a serious breach of manners. We are meant to order our lives so we can avoid being the embarrassed guest at the wedding feast, but the description may be too
effective for its purpose as it tends to make the reader want to defend the man against the
king’s attack. A similar expansion can be found in the account of the flood. In Genesis
we read:

And all flesh died that moved upon the earth, both of fowl, and of cattle,
and of beast, and of every creeping thing that creepeth upon the earth, and
every man: All in whose nostrils was the breath of life, of all that was in
the dry land, died. And every living substance was destroyed which was
upon the face of the ground, both man, and cattle, and the creeping things,
and the fowl of the heaven; and they were destroyed from the earth [. . .]
(Gen. 7:21-23)

By contrast, in Cleanness we read:

Summe styʒe to a stud & stared to þe heuen,
Rwly wyth a loud rurd rored for drede;
Hareʒ, hertteʒ also, to þe hyʒe runnen;
Bukkeʒ, bauseneʒ, & buleʒ to þe bonkkeʒ hyʒed;
& alle cryed for care to þe kyng of heuen,
Re-couerer of þe creator þay cryed vchone,
Þat amounted þe mase his mercy watʒ passed,
& alle his pyte departed fro peple þat he hated.
[..........................]
Frendeʒ fallen in fere & faþmed to-geder
To dryʒ her delful destyne & dyʒen alle samen.
Luf lokeʒ to luf & his leue takeʒ,

For to ende alle at oneʒ & for euer twynne. (389–402)

The expanded description provides a cautionary tale that any reader can apply to his or her life and loved ones, but once again the description may be too effective. The readers’ sympathy for the victims of the flood may cause them to question God’s judgment. The personalizing of parables also occurs in *Pearl*. Jim Rhodes believes that the choice of the parable of the workers in the field would have accomplished some degree of personalization: “That actual day laborers in the fourteenth century often worked exceedingly long hours for deplorably low wages and were systematically exploited by householders or the seigneurial class lends credence to the protests uttered here by the vineyard workers” (139). The *Pearl*-poet strengthens the connection a reader feels with the difficult labor of the workers by describing it in some detail rather than simply noting the passage of time as the original parable does. The poet also adds the traditional English notion of a covenant to the parable (Rhodes 139–40). The phrase “didst not thou agree with me for a penny?” (Matt. 20:13) is expanded to “Watʒ not a pené þy couenaunt þore? / Fyrre þen couenaunde is noʒt to plete” (562–63). As a feudal concept, the covenant calls to mind the ideal of mutual obligation Langland supports in *Piers Plowman*.

Many of the theological trends occurring in fourteenth century England find expression in the poems of the *Pearl*-poet. While maintaining a predominantly orthodox position, the poet explores such controversial topics as labor relations, confession and penance, and the disendowment of the church. He takes more liberal positions on vernacular religious instruction and the direct illumination of individual Christians by God.
Geoffrey Chaucer

Most of the writings of Geoffrey Chaucer (c. 1343-1400) are essentially about the rapid social evolution that was occurring during the late fourteenth century. Society was being torn apart and reformed under the pressures of plague, the Peasant’s Revolt—which marched along the route of the *Canterbury Tales* in the opposite direction, entering London directly under Chaucer’s windows (Knight 68–69)—schism and corruption within the church, and the economic problems of a reduced workforce and a growing mercantile class that had not yet found its position in society. The growing belief in God’s direct illumination of individuals, possibly without the intervention of the church, combined with a growing interest in science as a means of understanding God’s creation to support the development of a new sense of individualism. It is the struggle between individualism and collectivism and between feudal society and mercantile society that Chaucer captures in his narratives. The *Book of Fame* presents a portrait of both feudal and mercantile systems in utter chaos (Knight 15–23) while the *Parliament of Fowls* reenacts the political disturbance caused by the “Good Parliament” of 1376 (Knight 29). *Troilus and Criseyde* depicts the struggle to create a private life that can withstand the pressures of public expectations (Knight 57). Of course, Chaucer’s broadest exploration of his society in transition is in the *Canterbury Tales*.

In the *Canterbury Tales*, Chaucer not only depicts a wide range of occupations at every level of secular and religious society as they travel to England’s first Gothic cathedral, he allows many of his characters to express opinions on matters that would typically be the exclusive purview of the church. The range of opinions expressed is as wide as the range of characters, creating a sense of uncertainty that is not entirely resolved by the orthodox doctrine of the Parson’s Tale. The corruption of the church is
represented by the Prioress, Monk, Friar, Summoner, and Pardoner, all of whom suffer from the disordered affections Robert Grosseteste warned against. The Nun’s Priest and the Second Nun are properly mindful of their duties, but the Parson is the epitome of proper clergy, a priest Grosseteste would have approved. He takes pains to care for his parishioners, both physically and spiritually, and never considers leaving his poor parish for a more lucrative position in London (GP 480–514).

The Parson’s sermon is a layperson’s guide to confession and penance, part of the trend of vernacular religious instruction that began shortly after the Fourth Lateran Council. The Parson explains that the sacrament of penance is not effective without true contrition, which can be known only by the penitent and God. Even baptism, when performed on someone who has sinned in the past, will not save that person’s soul without true contrition (ParsT 128–34). Conversely, the feeling of contrition on its own is not enough to save a soul: “Now shaltow understande what is bihovely and necessarie to verray perfit Penitence. And this stant on three thynges: Contricioun of herte, Confessioun of Mouth, and Satisfaccioun” (154–57). There must be both the private contrition shared only with God and the mediation of a priest through confession and penance. There must also be a change in the penitent’s behavior, such that he or she strives never to sin again (107–09), as demonstrated by Gawain after his confession to Bertilak.

The Parson’s lengthy explanation of the necessity for “verray perfit Penitence” relies on some imagery taken from light metaphysics: “For, as seith Seint Basile, ‘The brennynge of the fyr of this world shal God yeven in helle to hem that been damnced, but the light and the cleerness [brightness] shall be yeven in hevene to his children” (444–47). Those who do good works but do not properly repent of their sins will not be
saved by good works alone, according to the Parson, but their good works will not be without benefit to them:

[. . .] al be it that they ne availle noght to han the lyf perdurable, yet availlen they to abregge of the peyne of helle, or elles to geten temporal richesse, or elles that God wole the rather enlumyne and lightne the herte of the synful man to have repentaunce; and eek they availlen for to usen a man to doon goode werkes, that the feend have the lasse power of his soule. (503–09)

Divine illumination is given not just to those who are in heaven, but to those who are in need of repentance and whose good works show that they are capable of a good life. If these sinners are open to divine illumination, they will see the truth of their sins and repent. The Parson takes a position against predestination, but not the extreme position expressed by Langland in the case of Trajan.

Grosseteste’s position against rejecting of the physical world in favor of properly ordering one’s affections is echoed in the Parson’s sermon:

For it is sooth that God, and resoun, and sensualitee, and the body of man been so ordeyned that everich of thise foure thynges sholde have lordshiphe over that oother; as thus: God sholde have lordshippe over resoun, and resoun over sensualitee, and sensualitee over the body of man. But soothly, when man synneth, al this ordre or ordinaunce is turned up-so-down. (551–57)

Sin is caused by disordered affections, deadly sin being the love of anything more than of God and venial sin being insufficient love of God (852–55). The Parson proceeds to explain the different categories of disordered affections in the form of the seven deadly
sin. Throughout this section of the sermon, he provides his audience with practical examples, such as the description of clothing that indicates the sin of pride (1028–35) and the descriptions of situations that would be considered homicide (1470–500). Through these examples, a lay audience would be able to apply the abstract concepts of the seven deadly sins to their own lives and know when it is time to seek penance. True contrition, however, comes from more than just knowing that one’s actions match the description of a category of sin. True contrition is “hevy and grevous, and ful sharp and poynaunt in herte” (213–14). This degree of sorrow requires insight into the pain one’s sin causes God, and this insight comes through divine illumination. The Parson’s sermon is an expression of orthodox theology, but one that has incorporated the notion of a personal relationship between God and individual Christians that allows them to play an active role in the salvation of their souls.

Just as the Parson’s sermon presents a theological ideal of proper behavior, so the Tale of Melibee presents a secular ideal (Knight 138–39). Melibee’s wife Prudence, trying to talk him out of a foolish and futile war with his enemies, lectures him on the proper means of acquiring and using wealth (Mel 2150–355). Her position as an acceptable authority is validated by the fact that her name makes her more an allegorical figure than a real woman. Prudence explains that wealth is not inherently good or evil, but has the potential for either. Extreme poverty is more consistently the root of evil, as desperation causes people to commit sins. Wealth can be a force for good if it is acquired and used properly (2153–93). The proper acquisition of wealth is gradual, patient, done through one’s own wit and hard work, and done without causing harm to others. Impatience to acquire wealth quickly will make one more likely to be willing to harm others, while hard work prevents idleness and acts as a defense against the devil
Wealth must be used in moderation and some portion of it must be used to help the needy and keep them from the sins caused by the desperation of extreme poverty. Above all, Prudence tells her husband, “in getynge of youre richesses and in usynge hem, ye shul alwey have thre thynges in youre herte, that is to seyn, oure Lord God, conscience, and good name” (2274–76). Prudence’s advice is entirely compatible with that of the Parson. Anyone following her advice would have nothing to add to his or her regular confession that was caused by the acquisition or use of wealth. Despite the conflicts that existed between the old order of society and the emerging order, if the laity would follow the advice of Prudence and the Parson and those in religious orders would follow the rules of those orders, society could function smoothly and every Christian soul—whether Christian by birth or through conversion—could have a chance of salvation. But they are describing an ideal; there are as few examples of it in practice in the *Canterbury Tales*, as in real life.

There are very few explicit references to light metaphysics and divine illumination in the *Canterbury Tales*, but its structure indicates that Grosseteste’s theory of universal divine illumination had become commonplace enough to be enacted without comment. The pilgrims are representative of English society in the late fourteenth century and representative of the spectrum of good and evil, with the Parson and Plowman at one end of the spectrum and the Pardoner and Summoner at the other. The pilgrims fail or succeed to varying degrees at meeting the societal ideal expressed in the Parson’s sermon and the Tale of Melibee, and their degree of failure or success has no correlation with their status or occupation. God offers his light to all of them, and their ability to accept that light depends on how well ordered their affections are.
Leaving England for Italy, we find the most concentrated and imaginative use of optical and light imagery in the writings of Dante (c. 1265-1321), who lived in Florence during most of the first stage of construction of the Gothic Basilica di Santa Maria del Fiore (1296-1302). Only the baptistery of the basilica was completed before Dante’s exile, but even this small Gothic structure was considered the heart of Florence and the beginning of a great public monument that would outshine anything built in neighboring cities (Oliphant 8; Turner 197). Although Dante wrote after Robert Grosseteste and the thirteenth-century perspectivists, he does not appear to have been familiar with their optical theories. His knowledge of optics, according to Simon Gilson, came primarily from the commentaries of Albert the Great and Thomas Aquinas on Aristotle (Gilson 54–55, 94–96, 131–33). Nevertheless, he clearly shared the renewed enthusiasm for optics and light imagery that spread across Europe with the translated scientific works coming out of Spain.

In addition to optical terminology and light imagery, traditional number symbolism and sacred geometry permeate Dante’s writings. To some extent the use of these traditions was inevitable in the *Divine Comedy*, since its setting necessitates references to the Trinity and the nine spheres of heaven, but much of Dante’s use of symbolic numbers and sacred geometry is not theologically necessary. For instance, the recurring nines in the *Vita Nuova* (2.1, 3.1, 3.8, 23.1, 28.3, 29.1, 29.2, 29.3) culminating in Dante’s statement that Beatrice is a nine, which uses theological principles to express admiration for the lady:

> Questa è una ragione di ciò; ma più sottilmente pensando, e secondo la infallibile veritade, questo numero fue ella medesima; per similitudine
dico, e ciò intendo così. Lo numero del tre è la radice del nove, però che, sanza numero altro alcuno, per se medesimo fa nove, si come vedemo manifestamente che tre via tre fa nove. Dunque se lo tre è fattore per se medesimo del nove, e lo fattore per se medesimo de li miracoli è tre, cioè Padre e Figlio e Spirito Santo, li quali sono tre e uno, questa donna fue accompagnata da questo numero del nove a dare ad intendere ch’ella era uno nove, cioè uno miracolo, la cui radice, cioè del miracolo, è solamente la mirabile Trinitade.

But this is just one reason. If anyone thinks more subtly and according to infallible truth, it will be clear that this number was she herself— that is, by analogy. What I mean to say is this: the number three is the root of nine for, without any other number, multiplied by itself, it gives nine: it is quite clear that three times three is nine. Therefore, if three is the sole factor of nine, and the sole factor of miracles is three, that is, Father, Son, and Holy Spirit, who are Three in One, then this lady was accompanied by the number nine so that it might be understood that she was a nine, or a miracle, whose root, namely that of the miracle, is the miraculous Trinity itself. (29.3)

In the Divine Comedy, theologically necessary imagery is echoed in unique images to reinforce a concept, such as the perfection and eternal nature of God’s creation symbolized by the traditionally spherical shape of the levels of heaven and reinforced by the circular movements of the blessed souls, the circular shape of Dante’s first vision of God, and the circular movement of the final vision:
Indi, come orologio che ne chiami
ne l’ora che la sposa di Dio surge
a mattinar lo sposo perché l’ami,
che l’una parte e l’altra tira e urge,
tin tin sonando con si dolce nota,
che ‘l ben disposto spirto d’amor turge;
cosi vid’ io la gloriosa rota
muoversi e render voce a voce in tempra
e in dolcezza ch’esser non pò nota
se non colà dove gioir s’insempra.

Then, like a clock that calls us at the hour
when the bride of God gets up to sing
matins to her bridegroom, that he should love her still,
when a cog pulls one wheel and drives another,
chiming its ting-ting with notes so sweet
that the willing spirit swells with love,
thus I saw that glorious wheel in motion,
matching voice to voice in harmony
and with sweetness that cannot be known
except where joy becomes eternal. (Par. 10.139–48)

Ne la profonda e chiara sussistenza
de l’alto lume parvermi tre giri
di tre colori e d’una contenenza;
e l’un da l’altro come iri da iri
parea reflesso, e ‘l terzo parea foco
che quinci e quindi igualmente si spiri.

In the deep, transparent essence of the lofty Light
there appeared to me three circles
having three colors but the same extent,
and each one seemed reflected by the other
as rainbow is by rainbow, while the third one seemed fire,
equally breathed forth by one and by the other. (Par. 33.115–20)

ma già volgeva il mio disio e ‘l velle,
si come rota ch’igualmente è mossa,
l’amor che move il sole e l’altre stelle.

But now my will and my desire, like wheels revolving
with an even motion, were turning with
the Love that moves the sun and all the other stars. (Par. 33.143–45)

Dante took traditional number symbolism and sacred geometry and adapted it to his own purposes, just as he did with optics and light imagery.

Through most of his pilgrimage, Dante’s vision is subject to the same optical errors that occur on earth:
“Però che tu trascorri
per le tenebre troppo da la lungi,
avvien che poi nel maginare abborri.

Tu vedrai ben, se tu là ti congiungi,
quanto ‘l senso s’inganna di lontano;

Because you try to pierce
the darkness from too far away,
it follows that you err in your perception.
‘When you are nearer, you will understand
how much your eyesight is deceived by distance. (Inf. 31.22–26)

Dante repeatedly misunderstands what he sees because of the limitations of human
vision, and his misunderstandings are often described in optical terms (Purg. 29.43–50;
Par. 30.46–51; Par. 30.61–96). Although his human vision is limited, it is still a useful
tool for gaining understanding of God’s justice as long as he uses his reason and
imagination to correct the information provided by his senses:

Vostra apprensiva da esser verace
tragge intenzione, e dentro a voi la spiega,
si che l’animo ad essa volger face;
e se, rivolto, inver’ di lei si piega,
quel piegare è amor, quell’ è natura
che per piacer di novo in voi si lega.
‘From real forms your perception draws
an image it unfolds within you
so that the mind considers it,
‘and if the mind, so turned, inclines to it,
that inclination is a natural love,
which beauty binds in you at once. (Purg. 18.22–27)

When Dante finally reaches the Empyrean, with vision that has been gradually
strengthened to withstand the ever-increasing light, he finds that the limitations of human
vision have been eliminated:

La vista mia ne l’ampio e ne l’altezza
non si smarriva, ma tutto prendeva
il quanto e ‘l quale di quella allegrezza.

Presso e lontano, li, né pon né leva:
ché dove Dio sanza mezzo governa,
la legge natural nulla rileva.

Within that breadth and height,
my sight was not confused but shared
the full extent and quality of that rejoicing.
There, near and far do neither add nor take away,
for where God, unmediated, rules
natural law has no effect (Par. 30.118–23).
The repeated emphasis placed through most of the *Divine Comedy* on the mechanics of human vision, and particularly visual error, heightens the effect of otherness in the Empyrean—outside time, outside space, and beyond the reach of natural law.

For Dante, light is not the first form of the universe, as it was for Grosseteste (*De Luce* 10–11). Instead, Dante retains the more traditional view of light as a metaphor for divine grace that helps make the concept of grace easier for the limited human mind to comprehend. He uses Dionysian neoplatonism even in his secular poems to describe the effect of a lady upon her admirer, much as he used number symbolism:

(2) Onde in questo verso che seguentemente comincia:

In lei discende la vertù divina,

io intendo commendare l’amore che è parte della filosofia. Ove è da sapere che discendere la vertude d’una cosa in altra non è altro che redurre quella in sua similitudine, si come nelli agenti naturali vedemo manifestamente: ché, discendendo la loro virtù nelle pazienti cose, recano quelle a loro similitudine tanto quanto possibili sono a venire ad essa.

(3) Onde vedemo lo sole che, discendendo lo raggio suo qua giù, reduce le cose a sua similitudine di lume quanto esse per loro disposizione possono dalla [sua] vertude lume ricevere. Così dico che Dio questo amore a sua similitudine reduce quanto esso è possibile a lui assimigliarsi. E ponsi la qualitate della reduzione, dicendo:

si come face in angelo che ‘l vede.

(4) Ove ancora è da sapere che lo primo agente, cioè Dio, pinge la sua vertù in cose per modo di diritto raggio, e in cose per modo di splendore
reverberato; onde nelle Intelligenze [separate] raggia la divina luce sanza mezzo, nell’altre si ripercuote da queste Intelligenze prima illuminate.

(2) Therefore in the stanza that begins with the words:

Into her descends celestial power,

I intend to praise love, which is a part of philosophy. Here we must observe that the descent of virtue from one thing into another is nothing but the causing of the latter to take on the likeness of the former; just as in natural agents we clearly see that when their virtue descends into things that are receptive, they cause those things to take on their likeness to the extent that they are capable of attaining to it.

(3) Thus we see that the Sun, as its rays descend here below, causes things to take on the likeness of its light to the extent that by their disposition they are capable of receiving light from its virtue. So I say that God causes this love to take on his own likeness to the extent that it is possible for it to resemble him. And the nature of that causation is indicated by saying:

As it does into an angel that sees him.

(4) Here we must further know that the first agent, namely God, instills his power into things by means of direct radiance or by means of reflected light. Thus the divine light rays forth into the Intelligences without mediation, and is reflected into the other things by these Intelligences which are first illuminated. (Conv. 3.14.2–4)

Dante accepted the belief that human contact with divine light must be mediated by the angels (Intelligences), a belief rejected by Grosseteste in his commentary on the Celestial Hierarchy (McEvoy, The Philosophy 93–94).
There was a long-standing disagreement over how to resolve the apparent inconsistency in the Bible on the issue of the necessity of mediation of divine light by angels. Some verses seemed to indicate that a human soul could never see God directly—“And he said, Thou canst not see my face: for there shall no man see me, and live” (Ex. 33:20)—while others indicated that direct vision of God would be possible in the afterlife—“For now we see through a glass, darkly; but then face to face: now I know in part; but then shall I know even as also I am known” (1 Cor. 13:12). In order to resolve the apparent conflict between the promise of direct vision of God and the incompatibility of God’s perfect nature with humanity’s flawed intellect, Albert the Great posited the doctrine of *lumen gloriae* in his *Super Dionysium De divinis nominibus* and Thomas Aquinas developed this doctrine further in his *Summa Theologica* (Gilson 253–54). The *lumen gloriae* is a special form of divine light in which human intellect is transcended, as are the limitations of human vision, when God becomes “not only object of knowing, but also medium by which the object is known” through a beatific vision (Leget 221). Only within the *lumen gloriae* can a human soul perceive God without the mediation of angels. Robert Grosseteste’s solution was to demonstrate that angelic mediation was not necessary, so there was no need for a special form of divine light to allow a human soul to perceive God (McEvoy, *The Philosophy* 93–94). Dante devised a different solution, accepting the need for *lumen gloriae* and making it the substance of the Empyrean:

Lume è là sù che visibile face
lo creatore a quella creatura
che solo in lui vedere ha la sua pace.

E’ si distende in circular figura,
in tanto che la sua circunferenza
sarebbe al sol troppo larga cintura.

There is a light above that makes the Creator
visible to every creature
that finds its only peace in seeing Him.
It spreads itself into so vast a circle
that its circumference would be larger
than the sphere that is the sun. (Par. 30.100–05)

Since the positioning of the blessed souls in the lower spheres of heaven is an illusion
designed to accommodate Dante’s still-limited intellect (Par. 4.37–42), and all the souls
are actually in the Empyrean with God, they all automatically receive the special light
needed to perceive God directly. The mechanism is different from the one devised by
Grosseteste, but the result is the same.

Dante’s heaven offers a place in the sight of God to all blessed souls, including
the souls of pagans, but he addresses the issue of universal salvation in his own way.
Trajan and Ripheus are in places of honor in the sixth sphere of heaven, not in the outer
circle of hell, where they would be expected (Par. 20.43–48, 67–72). Unlike the
traditional legend of Trajan, there is no mention of intervention by Pope Gregory I.
Dante also does not share Langland’s opinion that Trajan was allowed into heaven
because of his good works alone. In fact, the possibility of such a path to heaven is
eliminated by Beatrice:

Non potea l’uomo ne’ termini suoi
mai sodisfar, per non potere ir giuso
con umiltate obbediendo poi,

quanto disobediendo intese ir suso;

e questa è la cagion per che l’uom fue
da poter sodisfar per sé dischiuso.

‘With his limitations, man could never offer
satisfaction, for he could not descend as deep
into humility, by latter-day obedience,
‘as, by disobeying, he had thought to rise.
And this is the reason for which he was denied
the power of giving satisfaction on his own. (Par. 7.97–102)

Good works alone will not lead to salvation, but the sacraments of the church must not be
necessary, since two unbaptized souls are in the sixth sphere of heaven. Dante relies on
the optical principle of emanation for his explanation of salvation. God’s light
illuminates the angels and is emanated from them into the lower spheres, differentiated
but still participating in unity:

  e ‘l ciel cui tanti lumi fanno bello,
  de la mente profonda che lui volve
  prende l’image e fassene suggello.
  E come l’alma dentro a vostra polve
  per differenti membra e conformate
  a diverse potenze si risolve,
  cosi l’intelligenza sua bontate
'And the heaven made fair by all these lights
takes its stamp from the intellect that makes it turn,
making of itself the very seal of that imprinting.
‘And as the soul within your dust
is distributed through the different members,
conforming to their various faculties,
‘so angelic intelligence unfolds its bounty,
multiplied down through the stars,
while revolving in its separate oneness. (Par. 2.130–38)

Each sphere of heaven is controlled by an order of angels, following the hierarchy
described in the Celestial Hierarchy. Each order of angels has its own nature,
determined by the portion of God’s light they have received, and they impart that nature
to the sphere they control and the star in that sphere. Each human’s nature is determined
by the nature of the divine light emanated by the star that is dominant at the time of his or
her birth. A person’s nature determines his or her maximum rank in heaven
(Cogan 176–77):

Lo ben che tutto il regno che tu scandi
volge e contenta, fa esser virtute
sua provedenza in questi corpi grandi.

E non pur le nature provedute
sono in la mente ch’è da sé perfetta,
ma esse insieme con la lor salute:
per che quantunque quest’ arco saetta
disposto cade a proveduto fine,
sì come cosa in suo segno diretta.

‘The Good, which revolves and gladdens
all the realm you now are climbing,
puts its plan to work through these great bodies.
‘Not only are the natures of the souls foreseen
within the Mind that in Itself is perfect,
but, along with their natures, their well-being,
‘and thus whatsoever this bow shoots
falls predisposed to a determined end,
as a shaft directed to its target. (Par. 2.97–105)

A soul’s potential position in heaven is predetermined, but whether the soul ever reaches
that position is left to free will. We are all free to fulfill our natures by directing our
greatest love toward God or fail to fulfill our natures by misdirecting our greatest love
toward anything other than God (Par. 1.103–35).

Dante takes essentially the same position on disordered affections as did Robert
Grosseteste: too much attachment to earthly things is an impediment to union with God,
though it is not necessary to reject earthly things entirely to achieve union in the afterlife
(McEvoy, The Philosophy 324–329). In fact, the imagination, which is one of our
primary tools for understanding God, needs sensory input in order to function:
O imaginativa che ne rube
talvolta si di fuor, ch’om non s’accorge
perché dintorno suonin mille tube,
chi move te, se ‘l senso non ti porge?

O imagination, which at times so rob us
of outward things we pay no heed,
though a thousand trumpets sound around us,
who sets you into motion if the senses offer nothing? (Purg. 17.13–16)

Our senses, while necessary, can lead us astray, if we let them. We can become too
attached to some object of sensory pleasure, and if we don’t employ our reason to keep
the focus of our affections on God, we will allow ourselves to fall into sin:

Di picciol bene in pria sente sapore;
quivi s’inganna, e dietro ad esso corre,
se guida o fren non torce suo amore.

‘At first it tastes the savor of a trifling good.
It is beguiled by that and follows in pursuit
if guide or rein do not deflect its love. (Purg. 16.91–93)

“Né creator né creatura mai,”
cominciò el, “figliuol, fu sanza amore,
o naturale o d’animo; e tu ‘l sai.

Lo naturale è sempre sanza errore,
ma l’altro puote errar per malo obietto
o per troppo o per poco di vigore.

Mentre ch’elli è nel primo ben diretto,
e ne’ secondi sé stesso misura,
esser non può cagion di mal diletto;

ma quando al mal si torce, o con più cura
o con men che non dee corre nel bene,
contra ‘l fattore adovra sua fattura.

Quinci comprender puoi ch’esser convene
amor sementa in voi d’ogne virtute
e d’ogne operazion che merta pene.

‘Neither Creator nor His creature, my dear son,
was ever without love, whether natural
or of the mind,’ he began, ‘and this you know.

‘The natural is always without error,
but the other may err in its chosen goal
or through excessive or deficient vigor.

‘While it is directed to the primal good,
knowing moderation in its lesser goals,
it cannot be the cause of wrongful pleasure.

‘But when it bends to evil, or pursues the good
with more or less concern than needed,
then the creature works against his Maker.
'From this you surely understand that love
must be the seed in you of every virtue
as well as of each deed that merits punishment. (Purg. 17.91–105)

Those who realize their error before death are able to correct the imbalance in their souls
in purgatory, but those who do not must remain in hell:

Poi fummo dentro al soglio de la porta
che ‘l mal amor de l’anime disusa,
perché fa parer dritta la via torta,
sonando la senti’ esser richiusa;

Once we had crossed the threshold of the gate
not used by souls whose twisted love
tries to make the crooked way seem straight,
I knew that it had shut by its resounding. (Purg. 10.1–4)

Dante combined predestination and free will, universal salvation and divine justice, the
need for angelic mediation in this life and the elimination of that need in the next. All of
these points of conflict are resolved in a theology based upon the scientific principles of
optics.

The spread through Europe of newly translated scientific and metaphysical
treatises during the twelfth and thirteenth centuries contributed to an increased interest in
optics and light metaphysics. This interest contributed to and was reinforced by the
development and spread of Gothic architecture. The accompanying theologies of divine
illumination contributed to the literary and social evolutions of the thirteenth and
fourteenth centuries. The authors we have just examined were among many who participated in these literary and social evolutions.
Chapter 6

Conclusion

From serving as an easily understood analogy for the emanation of the Many from the One, natural light became an analogy of God’s light, then became the first form of the universe. In either of these last two roles, light became the most appropriate source of decoration of a church interior. Gothic church interiors designed to let in as much light as possible, church furnishings and sacred vessels covered with precious metals and encrusted with gems, and increasingly naturalistic sculpture emphasize the sense of sight as a means of gaining understanding of the divine. The senses of smell and hearing receive lesser emphasis through the singing of the choir and the burning of incense or scented oil. These same senses applied to the world outside the church, tempered with the knowledge that all things in nature are reflections of God, again lead the human mind and soul closer to God.

The first Gothic structure, the abbey church of St.-Denis, was inspired by the neoplatonic writings of the Pseudo-Dionysius. The radical rebuilding of this politically important church by its equally important Abbot, coinciding with and reinforced by the relatively rapid influx of translated Greek and Arabic scientific and philosophical treatises, provided the impetus for the evolution and dissemination of Gothic architecture across the Christian West. The growing prevalence of light-filled places of worship in turn reinforced the continuing interest in the growing body of Greek and Arabic optical and neoplatonic treatises. The combination of the scientific and metaphysical study of
light with the practical use of light to decorate sacred structures generated a growing emphasis on divine illumination as a gift to all people from every level of society. This emphasis played a very important role in the decrees of the Fourth Lateran Council, which included a statement reiterating the requirement for regular confession and penance by the laity. The penitential literature spawned by this decree was joined by many other forms of literary religious instruction for the laity, written in the vernacular and made widely available.

The increased availability and popularity during the thirteenth and fourteenth centuries of vernacular religious literature, including catechisms, confessionals, sermons, and religious fiction, combined with the increased religious instruction mandated by Pope Innocent III, provided the laity with unprecedented access to complex theological concepts. When the mandated religious instruction took the form of sermons delivered within light-filled Gothic churches, the symbolic impact of God’s illumination was heightened. The inspiration derived from this situation can be seen in the religious literature of the thirteenth and fourteenth century: the explicitly architectural imagery of the Pearl-poet, the heavy use of light imagery and optical terminology by Dante, the concern for the spiritual welfare of the laity demonstrated by Grosseteste, and the successful introduction to theology evident among Chaucer’s pilgrims.

The impact of Gothic architecture as a tool of God’s illumination was such that in the early fifteenth century, Jan van Eyck chose a Gothic setting for the Virgin in his Madonna in the Church (c. 1425) (see Fig. 83) and Annunciation (c. 1435) (see Fig. 84). The Madonna in the Church depicts the Madonna in a light-filled Gothic church—not a specific church, but a structure modeled after thirteenth-century Gothic architecture (Meiss 181). The Annunciation depicts an earlier Gothic structure with a beam of light
passing through the upper windows, carrying with it a dove and symbolizing the incarnation. Gabriel’s rainbow wings add more optical imagery, evoking the scientific optical studies of Robert Grosseteste, Roger Bacon, and the perspectivists.

Fig. 83. Jan van Eyck, *The Madonna in the Church*, c. 1425.
Fig. 84. Jan van Eyck, *The Annunciation*, c. 1435.
Works Cited


<http://images.library.pitt.edu/cgi-bin/i/image/getimage-idx?view=image;entryid=x-fcai6e000700;viewid=FCA16E000700.TIF;cc=chartres;c=chartres;quality=m1200>.


<http://en.structurae.de/structures/data/index.cfm?id=s0014414>.


O’Meara, Dominic J. *Plotinus: An Introduction to the Enneads*. Oxford: Clarendon, 1993


Foundation, 1963. 1151–211.


Rhodes, James Francis. Poetry Does Theology: Chaucer, Grosseteste, and the Pearl-

Rorem, Paul. Pseudo-Dionysius: A Commentary on the Texts and an Introduction to

Rosin, D. “The Ethics of Solomon Ibn Gebirol.” Jewish Quarterly Review 3.2
(1891): 159–81.

Schnitzler, Markus. “The Cathedral La Seu in Palma de Mallorca, Seen from the Side,”

Scott, Robert A. The Gothic Enterprise: A Guide to Understanding the Medieval


Shortell, Ellen M. “The Plan of Saint-Quentin: Pentagon and Square in the Genesis of
High Gothic Design.” Ad Quadratum: The Practical Application of Geometry in


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