Masaccio's *Trinity* Ushers in The Golden Renaissance

by Bonnie James

'After Giotto, art declined, because all artists imitated other paintings, and continued to decline, until Tommaso Fiorentino, known as Masaccio, showed with perfect work, how all others who chose a maestro other than nature, maestro of maestros, labored in vain.'

—Leonardo da Vinci
Treatise on Painting c. 1500

This week we celebrate both Christmas, and the birth of the Renaissance genius Masaccio. Tommaso Cassai, better known as Masaccio (a nickname, meaning roughly, "big Tom") was born on Dec. 21, 1401, in San Giovanni Valdarno, a small Tuscan town, not far from Florence, at the dawn of the 15th Century Golden Renaissance, in whose birth, he played no small part. Although he lived to be only 27 or 28 years of age, he is justly celebrated as the first true Renaissance painter, and the two works for which he is best known, *The Trinity* in Santa Maria Novella, and the fresco cycle of the *Life of St. Peter* in the Brancacci Chapel, both in Florence, are among the most revolutionary works of that extraordinary century. His mentor and friend, the architect and scientific genius Filippo Brunelleschi (1377-1446), who founded Renaissance architecture, and built the great Cupola, or Dome, on the Cathedral of Florence, collaborated with Masaccio on the *Trinity* fresco, in which, for the first time, the new science of linear perspective is employed, to create a believable three-dimensional architectural space, occupied by lifelike human figures. Masaccio, along with Brunelleschi, and the sculptor Donatello, who introduced Masaccio to the principles of Classical sculpture, formed an artistic and scientific trinity that opened the door to the Renaissance that was to unfold before them.

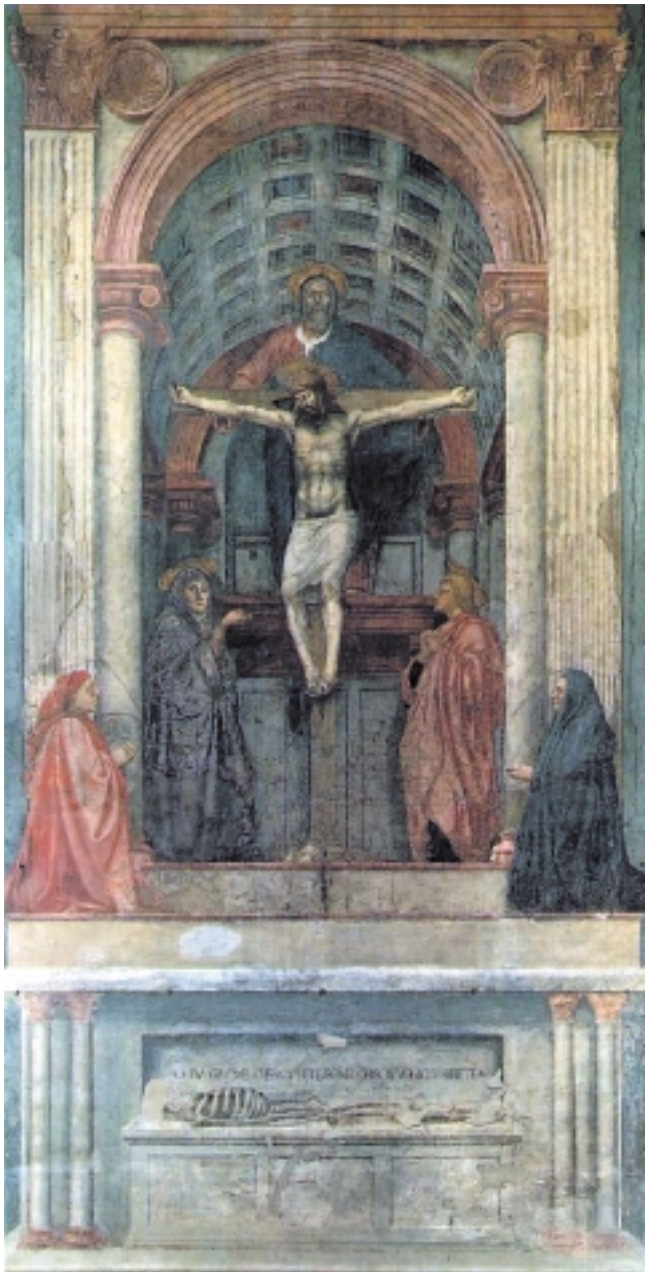
Throughout the long decline of Western Civilization known as the Middle Ages, art in Europe followed the Byzantine tradition, in which images of sacred personages were rendered in a highly stylized way, with little attempt to place them in a realistic space, or to give them individual features or personalities. They were meant to be worshipped as icons, not to inspire contemplation on the nature of man and his relationship to God and to the universe.

The 14th-Century Little Dark Age

All this began to change with Giotto di Bondone (1267-1337), who, with his contemporary and fellow Florentine Dante Alighieri (1265-1321), initiated an early Renaissance, whose momentum was shattered by the mid-14th Century economic depression, leading to the outbreak of the Black Death in 1348, and the little Dark Age of the 14th Century that followed, in which the population of Italy was reduced by at least half. Florence was so devastated that for a long time, the disease was known as "the plague of Florence." (Ironically, it was the bankruptcy of Giotto's patrons, the Bardi and Peruzzi banking houses, in 1342, which triggered the economic collapse that led to the spread of the Plague.)

Masaccio

Masaccio, born just 50 years after the peak of the Black Death (1348-1351), would have been quite familiar with Giotto's frescoes and altarpieces in the churches around Florence. Giotto was, as Leonardo da Vinci notes in the quote above, the first Western painter, following the Greeks, to attempt to "humanize" his figures, and to place them in a naturalistic space. Although Giotto did not employ linear perspective, his paintings display an intuitive and rational perspective, and his figures are given a monumentality and dignity, which celebrates the idea that man occupied a special place in God's universe. Moreover, his figures, for the first



The Trinity, by Masaccio (c. 1425).

time, began to express real human emotion—they became individuals with distinct characteristics. This is why Giotto is known as the "Father of Renaissance Painting," and was later revered as such by the greatest of the Renaissance artists.

Brunelleschi and Masaccio, along with the other intellectual giants of the early 15th Century, were determined to reorganize civilization in such a way that a dark age would never happen again. This meant breaking out of the prison of medieval superstition, and literally, refounding civilization, based on a new concept of man: cognitive man, not subject to the whims of nature, or irrational or cruel tyranny, but man fully in the image of the Creator, capable of discovering the laws of the natural universe, and putting them to work for his benefit and to the benefit of his posterity.

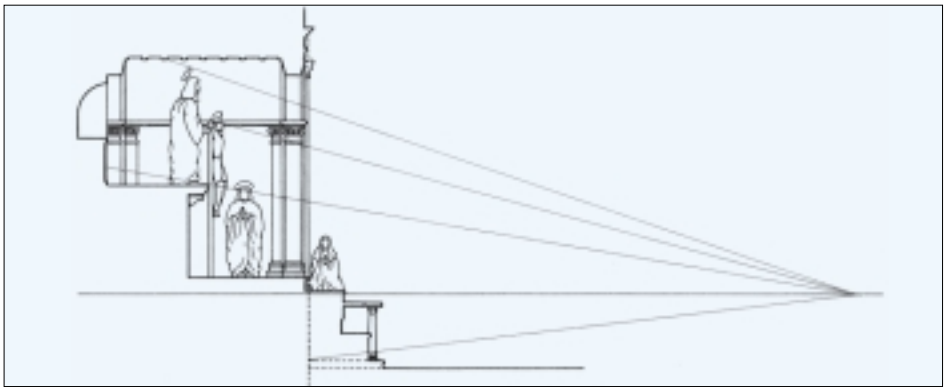
The masterpieces of Masaccio and Brunelleschi, dating from the third decade of the 15th Century, ushered in the new spirit of man: Masaccio's *Trinity* fresco in Santa Maria Novella, and his Brancacci Chapel frescoes of the *Life of St. Peter;* and Brunelleschi's Foundling Hospital (Ospedale degli Innocenti), and the Cathedral Dome of Santa Maria del Fiore.

The *Holy Trinity*

While the subject of the *Trinity* was not a new one in art—it was often depicted going back to the earliest times in the Christian era—Masaccio's *Trinity* (c. 1425-27) is unprecedented. While Masaccio presents us with the traditional "Throne of Grace"—God the Father, the Son, and the Holy Spirit—the presentation is completely new: Gone is the hierarchical organization—an ideological system, wherein the sacred figures are oversized, relative to saints, and finally, mere mortals; gone is the flat, gold-leaf background, used to emphasize the sanctity of the event. Instead, we see a fully realized Brunelleschian architecture, invoking the impression that a chapel has been carved into the wall of the church to make room for the miracle before our eyes. Here is the Manifesto of the new art of the Renaissance.

In 1413, Brunelleschi had demonstrated the principles of linear, or optical perspective, using a camera obscura. But here, for the first time, Masaccio and Brunelleschi employ these principles in a painting, to create the illusion of depth in space. Moreover, the architecture is modelled on that of

The diagram shows the perspective scheme. Inset: Masaccio.



Brunelleschi's revolutionary Ospedale degli Innocenti, begun 1419—the first true Renaissance building—which every Florentine would have immediately recognized in Masaccio's painting.

The building of the Ospedale, a home for orphans, was itself exemplary of the spirit of the early Renaissance, indicating the importance which the city fathers of Florence placed on the welfare of even the least among them. That the powerful Silk Guild, which financed the Hospital as a charitable enterprise, would employ the greatest living genius, Filippo Brunelleschi, to design such a humble building, shows that the leaders of the Renaissance were committed to creating a society based on the idea of the common good, or what the American Founding Fathers would later call the general welfare, as written into the U.S. Constitution.

Brunelleschi's Founding Hospital (Ospedale degli Innocenti), begun 1419.

In Masaccio's fresco, we are see a depiction of the *Trinity,* set into a beautifully conceived niche in the wall, defined by a Brunelleschian rounded arch, set on columns, with roundels on either side of the arch, all of which are immediately identifiable with the, then, newly constructed facade of the Ospedale.

At the highest point is God the Father, who presents to us, the crucified Christ; each occupies a distinct space (see diagram), both vertically, and in depth. Below, and on either side of Christ, and slightly forward in space, nearer the viewer, are the Virgin Mary and St. John the Evangelist; and, in yet another space, outside the niche, kneeling on either side, are the donors, Domenico Lenzi and his wife.

Between God the Father and Christ the Son, is the dove of the Holy Spirit, descending from one to the other. Masaccio painted the dove as a fully three-dimensional form in space (probably based upon observation of real birds in flight), whose wings propel his downward motion, as they reach up to embrace the face of God, and his head is turned downward to gaze upon the Son.

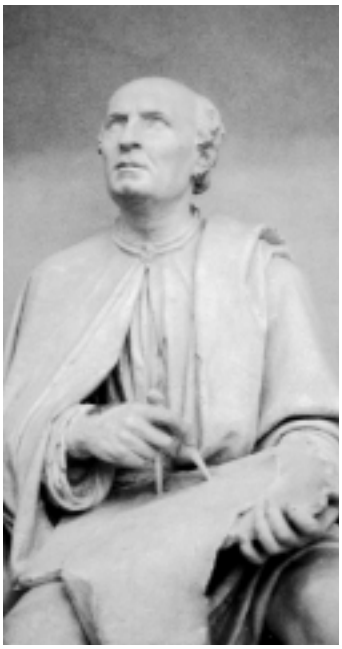
The concept which this image articulates, is that of the *Filioque:* that the Holy Spirit flows from the Father **and the Son,** simultaneously. In non-theological terms, this metaphor signifies that man (the Son), participates in God, by continuing his Creation. This is the central idea of Renaissance humanism: that Man is created in the image of God, and by discovering those principles by which He created the universe, and applying them to the improvement of mankind over generations, man becomes the "little creator."

Some 15 years later, the concept of the *filioque* would become the basis for the unification, however brief, of the Eastern and Western Christian churches, under the brilliant leadership of Cardinal Nicholas of Cusa, at the Council of Florence. We know that Cusa, who was born in the same year as Masaccio, was in Rome in 1425, and it is possible that he may have gone to Florence as well. Little is known of Masaccio's activities before 1426, but we know he died in Rome in 1428. It was not unusual for Florentine artists to travel to Rome for study and work, as Brunelleschi and Donatello did earlier. Perhaps the young Masaccio was in Rome in 1425, or perhaps Nicholas was in Florence. Did Cusa influence Masaccio's revolutionary vision of the *Trinity?* We don't know for sure, but it is tempting to think so, and certainly possible.

'What I Am, You Will Be'

Looking back at the *Trinity,* we see, in a separate rectangular niche, below the step on which the donors kneel, a skeleton resting on a sarcophagus—all illusionistic, of course; the skeleton represents Adam, the first man: Christian tradition holds that Christ was crucified above Adam's tomb. Inscribed on the tomb, in Italian, are the words: "I was once that which you are; and that which I am, you also will be": A reminder of human mortality, which can only be overcome through Christ, and a poetic expression of the idea of the simultaneity of eternity—that by adding to the contributions of those who came before, and giving something of our own to future generations, we live in the past, the present, and the future, all at once.

To reenforce this idea, Masaccio has constructed the perspective, so that, only when the beholder kneels at the altar, which would have been set in front of the skeleton's niche, does the entire *Trinity* become visible. In fact, there are **two** levels on which the *Trinity* must be viewed: the vanishing point (see diagram) establishes the first eye-level at that of the lower step, on which the



The Cupola on Florence Cathedral. Brunelleschi used "hanging chains" (catenaries) as guides during construction. Inset: Filippo Brunelleschi.

donors (the mortals) are kneeling. But Masaccio has employed a second eye-level, which can only be comprehended metaphorically! Could we but rise above the floor, to the level of God the Father, we would look directly into his eyes. How can we do this? Mary points the way: through her son, Jesus, lies the way to God, and to immorality. As Mary directs our gaze to the crucifix, we are then drawn to the face of Christ, and to the Dove of the Holy Spirit, and finally to the face of God. Crowning all, is Masaccio's beautiful barrel vault, perfectly foreshortened, and unifying the entire composition.

No wonder the people of Florence were dumbstruck (as Giorgio Vasari, an early biographer of the Renaissance artists reports) when they first beheld this magnificent work!

A few years before Masaccio began work on the *Trinity* in Santa Maria Novella, Brunelleschi had begun construction of the dome on Santa Maria del Fiore, the Cathedral of Florence. Today, the dome still towers over the city, and has, appropriately, come to symbolize both Florence, and the Renaissance itself. The project involved the entire Commune of Florence, whose population followed its every development—just as, 600 years later, Americans would follow every development of the space program of the 1960s and '70s.

The project of the dome began in 1418, with the famous competition, announced by the city fathers, for the design of a dome or Cupola to crown the cathedral, which had remained incomplete for more than 100 years.

Filippo, born in 1377, in the shadow of the half-built Cathedral, had been thinking about how to solve this problem for a long time. His father, the notary Ser Brunellesco di Lippo Lappi, had voted in the referendum of 1367 that approved the design of the architect, Neri di Fioravanti, calling for a huge octagonal dome to crown the nave of the church. The problem was that, at the time, no one had the faintest idea how this would be accomplished.

In 1401, Brunelleschi left for Rome with his friend, the sculptor Donatello, where he would stay, for most of the next 15 years, studying the Roman ruins, including the Pantheon, with its huge dome.

According to Brunelleschi's 16th-Century biographer Antonio Manetti, Filippo measured the Roman buildings—their heights and proportions. He studied the composition of Roman concrete; he examined the Golden House of the Emperor Nero, whose dining hall formed an octagon, covered with a dome, whose octagonal shape, though only 35 feet across, would have had special significance for someone thinking about the Cathedral in Florence.

The 'Great Projects'

By the time Filippo, now 40 years old, returned to Florence, in about 1416 or 1417, the tambour, or drum of the Cupola, was been completed, with 14-foot-thick walls, to support the weight of the dome. By then, Brunelleschi had already established his

reputation as the inventor of linear perspective, through his famous experiment with the camera obscura.

Brunelleschi stunned the Opera del Duomo by proposing to build the huge vault, **without the aid of centering**—that is, without building a substructure of wood, upon which the dome itself would be built. In fact, the size of the Cupola prohibited the use of the traditional building method, since it was to be so large, there were not enough trees in the hills surrounding Florence to provide the wood! When the amazed city fathers demanded that Filippo provide them with a model of his building, Brunelleschi challenged them by demanding they appoint him *capomaestro* (foreman), if he could make an egg stand on its end. He told them that this would be the same principle that he would use in constructing a free-standing dome. When they agreed, Brunelleschi took the egg, and cracked the bottom on a table, and stood it on end. This convinced the Florentines that Brunelleschi should have the commission.

The "great project" of the Dome would revolutionize not only architecture, but, also required a complete transformation of the workforce, and the invention of many new machines, including a hoist which became one of the most celebrated machines of the Renaissance. One of Filippo's machines, the *castello,* (crane) was later sketched by the young Leonardo, then working as an apprentice to the sculptor Andrea del Verrocchio.

What was the secret behind Brunelleschi's astounding accomplishment: How was he able to construct the dome without centering? What was the physical principle he discovered and applied to the Cupola?

Lyndon LaRouche reports that, during the mid-1980s, when he first began to study the design of the Cupola, he made an important discovery:

"The crucial issue to be addressed was: What was Brunelleschi's physical principle of design of the construction of that Cupola? I looked, and looked. It struck me: The hanging-chain principle, the catenary! Suddenly, it was all obvious; I looked at images of the Cupola, and had the occasion to observe it again directly. I could see it all so clearly! …

"Brunelleschi had used the hanging-chain principle, explicitly, as his method of constructing the Cupola. This was more than two and a half centuries before Leibniz and Bernouilli had settled the role of the catenary in defining both the proof of the infinitesimal principle of the calculus and the principle of universal least action"[1] (see box).

Filippo Brunelleschi died on April 15, 1446, just after the first stone of the lantern at the summit of his dome was consecrated. The inscription on his tomb reads: *"Corpus Magni Ingenii Viri Philippi Brunelleschi Fiorentini"* ("Here lies the body of the great ingenious man Filippo Brunelleschi of Florence.")

As we face today, another existential crisis of civilization, we may draw inspiration from the fact that, 600 years ago, faced with the possibility of a new dark age, the leaders of the Golden Renaissance rose to the challenge, and, through their immeasurably beautiful works, inspired generations to come.

1. Lyndon H. LaRouche, Jr., "Science and Infrastructure," *EIR*, Sept. 27, 2002.

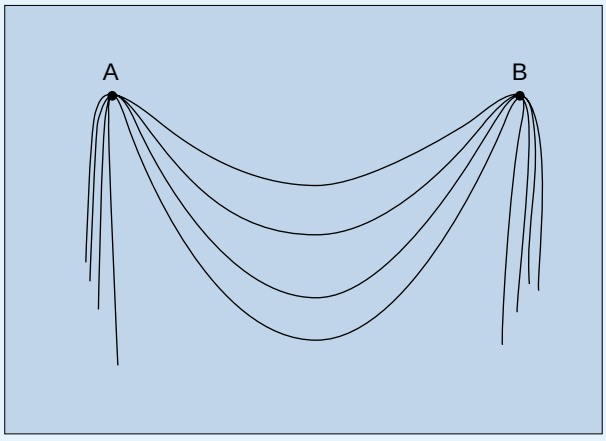
Brunelleschi's Catenary

The curvature of the surface of the skin of the Brunelleschi dome is, in principle, modelled on a catenary/catenoid surface, such as is produced, for example, when we stretch a soap film between two hoops. The surface of the dome was constructed by a masonry technique what is called "slack-line masonry" and has all the qualities of least action associated with surfaces characterized as "minimal surfaces"; that is the qualities of a surfaces of "equal" or "least" tension. . . .

The catenary distributes weight evenly across the length of a hanging chain or cable, significantly increasing the spannable distance." [This is the same principle used in the construction of suspension bridges—ed.]

Lyndon LaRouche makes double reference to the importance of non-constant curvature as represented by the use of the catenary/catenoid minimal surface in Brunelleschi's construction of the dome of Florence:

"One is startled, at first, by the fact that, as early as the middle decades of the Fifteenth Century, the catenary was used, not merely as a form, but as a physical principle of curvature, to solve the otherwise insoluble problem of construction posed" ("On The Issue of Mind Set," *EIR*, March 3, 2000.)



—Ted Andromidas

(Excerpt from an unpublished "Pedagogical" discussion in April 2000.)