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**Errata:** Beginning in late 2014 there was an error in the numbering of the Rosicrucian Digest issues: The December 2014 "Rosicrucian Order AMORC" issue which was printed as 93:1 (2014) should have been 92:2 (2014).

The "100th Anniversary" issue which was printed as 94:1 (2015) should have been 93:1 (2015).

The "World Convention" Issue (Fall 2015) resumed the correct numbering sequence and is 93:2 (2015).

The present issue is 94:1 (2016).

The online versions are numbered correctly.

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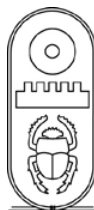


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In this issue of the *Rosicrucian Digest*, we celebrate the four hundredth anniversary of the publication of the third Rosicrucian manifesto – the *Chymical Wedding of Christian Rosenkreuz*, published in Strasbourg in 1616. Presented as an alchemical novel and autobiography of Christian Rosenkreuz, this document is the model for the most recent Rosicrucian manifesto (number six) – *The New Chymical Wedding of Christian Rosenkreuz*, 1616 - 2016, published on January 6, 2016.

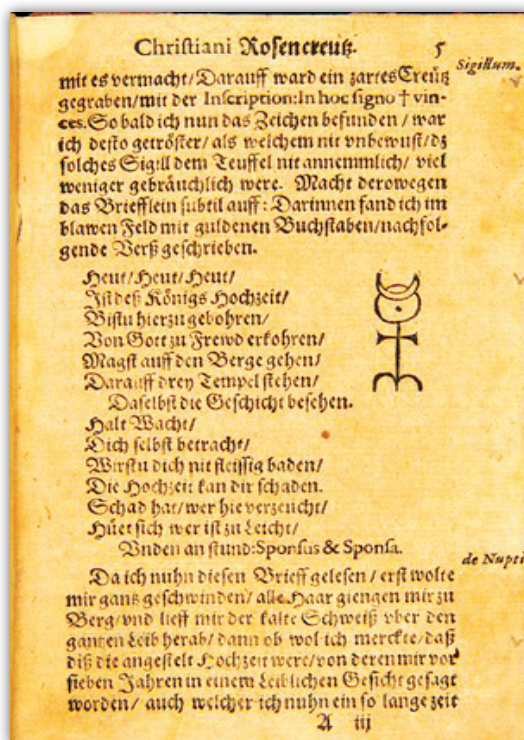


**Today - today - today  
is the Royal Wedding day.  
For this you were born,  
Chosen by God for joy.  
You may ascend the mount  
Whereon three temples stand  
And see the Thing yourself.  
Take heed,  
Observe yourself!  
If you're not clean enough,  
The wedding can work ill.  
Perjure here at your peril;  
One who is light, beware!  
Sponsus and Sponsa.**



# THE CHYMICAL WEDDING

Christian Rebisse, FRC



The *Chymical Wedding of Christian Rosenkreuz*, a book that is considered to be the third Rosicrucian manifesto, made its appearance in 1616. It was printed in Strasbourg by Lazarus Zetzner, the publisher of *Theatrum chemicum* and numerous other alchemical treatises. This work differs considerably from the first two manifestos [*Fama Fraternitatis* and *Confessio Fraternitatis*]. First of all, although it was likewise published anonymously, it is known that Johann Valentin Andreae was the author. Secondly, it is unusual in form in that it is presented as an alchemical novel and as an autobiography of Christian Rosenkreuz.

Despite the important development of science during this period, alchemy remained a potent force. It contributed by enriching the thoughts of researchers, prompting Frank Greiner to state: “The invention of the modern world did not arise essentially from the triumph of

machinery, but also found some of its ferment in the alembics of goldmakers and extractors of the quintessence.”<sup>1</sup> In the seventeenth century alchemy broadened its perspectives. It claimed to be a unifying science that included medical applications and developed a more spiritual dimension. It also sought to become part of the thinking on the history of Creation, of the tragic cosmogony which brought about not only the fall of humanity, but nature as well. Thus, the alchemist was not only a physician who helped humanity to regenerate itself so as to be reborn to its spiritual condition, but the alchemist was also nature’s physician. As Saint Paul pointed out, Creation is in exile and suffering, and it is awaiting its liberation by humanity.<sup>2</sup> Gerhard Dorn, a follower of Paracelsus, was an individual who was typical of this evolution.<sup>3</sup> And it was in this set of circumstances, so rich in published works, that the *Chymical Wedding of Christian Rosenkreuz* took its place.

## Johann Valentin Andreae

The author of this manifesto, Johann Valentin Andreae (1586-1654), came from an illustrious family of theologians. His grandfather, Jakob Andreae, was one of the authors of the Formula of Concord, an important document in the history of Lutheranism. In recognition of his meritorious services, the Count Palatine Otto Heinrich granted him a coat of arms. Jakob's design incorporated the cross of St. Andrew, in reference to his family name, with four roses, in deference to Martin Luther, whose armorial bearings depicted a rose. The emblem of Luther may be described thus: in the center is a black cross, bringing to mind mortification and recalling that faith in the crucified Christ leads to redemption. This cross reposes in the center of a red heart, the symbol of life. The latter is placed on a white rose, the sign of joy and peace. The whole is surrounded by a golden ring symbolizing eternal life. It is possible that this emblem was inspired by the writings of Saint Bernard of Clairvaux, which were deeply appreciated by Luther. Indeed, in his sermons on the *Song of Songs*, Saint Bernard often used the image of the cross united with a flower when describing the marriage of the soul with God.

From childhood, Johann Valentin Andreae was brought up surrounded by alchemy. His father, a pastor in Tubingen

[Germany], owned a laboratory, and his cousin, Christophe Welling, was also an enthusiastic follower of this science. Young Johann Valentin followed in his father's footsteps in theological studies. He was a friend of the theologian Johann Arndt, who considered him to be his spiritual son

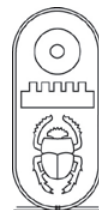
and greatly influenced the youth. Arndt was part of the tradition of Valentin Weigel, a tradition which tried to achieve a synthesis between Rheno-Flemish mysticism, Renaissance Hermeticism, and Paracelsian alchemy. Johann Valentin was also the friend of Tobias Hess, a

theologian who pursued Paracelsian medicine and naometry. Devoting himself to this science of "measuring the temple" while at Tubingen, young Andreae assisted his teacher and protector, the theologian Matthias Hafenreffer, by drawing the illustrations for a study

on the Temple of Ezekiel. The youthful scholar was likewise intrigued by the mediating role of symbols in the spiritual experience. In this regard he shared the preoccupations of his teacher Johann Arndt, who was noted for his mysticism and who was considered to be one of the precursors of pietism.

The author of the *Chymical Wedding*

considered the theater to be a worthwhile means for inducing his contemporaries to ponder serious matters, and some of his works were influenced by the *commedia dell'arte*. This is true in the case of *Turbo*, a play in which Harlequin made his first ap-



pearance on the German stage. This play, published in the same year as the *Chymical Wedding*, makes reference to alchemy. This important work would later serve as the model for Goethe's *Faust*. However, although the author's learning in the Hermetic art is readily apparent,<sup>4</sup> his view of alchemists is also ironic. Generally speaking, whether in theology or science, what interested Andreae was useful knowledge and not vain speculation. For instance, he and his friend John Amos Comenius helped to revive pedagogy in the seventeenth century. In 1614, he was named suffragen pastor of Vaihingen. Later he became the superintendent in Calw, and then the preacher and counselor at the consistory of Stuttgart. After having held various offices, he ended his career as the abbot of Adelberg, a town where he died in 1654.<sup>5</sup>

Johann Valentin Andreae left an impressive body of work.<sup>6</sup> It was in 1602-1603, when he was not yet seventeen years old, that he made his first attempts as an author. He wrote two comedies about Esther and Hyacinth, as well as the first version of the *Chymical Wedding*. The protagonist of this novel already went by the name of Christian Rosenkreuz – although this name may only have been added at its publication in 1616. As the manuscript for the first version of this text has disappeared, it is difficult for us to know. However, what we can say for certain is that the symbols of the rose and cross rarely crop up in the novel. We also know that Andreae revamped the text for the 1616 edition. It is intriguing to note that the *Chymical Wedding* was issued in the same year and by the same publisher as *Theca gladii spiritus* (The Sheath of the Glory of the Spirit). This book repeated twenty-eight passages from the *Confessio Fraternitatis*. However, the name of Christian Cosmoxene was substituted for that of Christian Rosenkreuz, and the author did not seem to adhere to all the

concepts presented in the first Rosicrucian texts. It is worth recalling that in the year in which the *Fama Fraternitatis* was written, Andreae proposed the creation of a Societas Christiana, a group which, in some respects, resembled the project formulated in the manifestos. Throughout his life, he was constantly creating societies of learning, such as the Tübingen Circle, or organizations of a social character, such as the Foundation of Dyers, which is still in existence today.

### The Story

The third Rosicrucian manifesto differs considerably from the two preceding ones. Briefly, here is the story. Christian Rosenkreuz, an elderly man who is eighty-one years old, describes his adventures over a seven-day period in 1459. After being summoned to a royal wedding by a winged messenger, Christian leaves his retreat, situated on a mountain slope. After various incidents, he arrives at the summit of a high mountain, and then passes through a succession of three gates. Once within, he and the other people who have been invited are put to a test in which they are weighed on scales. If they are judged virtuous enough, they are allowed to attend the wedding. The select few receive a Golden Fleece<sup>7</sup> and are presented to the royal family.

After being brought before the royal family, Christian Rosenkreuz describes the presentation of a play. This is followed by a banquet, after which the royal family is decapitated. The coffins containing the corpses are loaded onto seven ships bound for a distant island. Arriving at their destination, they are placed in the Tower of Olympus, a curious seven-story edifice.

For the remainder of the narrative we witness the strange ascent of the guests through the seven stories of the tower. At each level, under the direction of a maiden and an old man, they participate

in alchemical operations. They carry out a distillation of the royal skins from which a liquid is obtained that is afterwards transformed into a white egg. From this a bird is hatched that is fattened before being decapitated and reduced to ashes. From the residue, the guests fabricate two human-shaped figurines. These homunculi are fed until they become the size of adults. A final operation communicates to them the spark of life. The two homunculi are none other than the king and the queen who have been restored to life. Shortly afterwards, they welcome their guests into the Order of the Golden Stone, and all return to the castle. However, Christian Rosenkreuz, at the time of his first day in the castle, committed the indiscretion of entering the mausoleum where the sleeping Venus reposes. His inquisitiveness condemns him to become the guardian of the castle. The sentence does not seem to be executed, because the narrative suddenly ends with the return of Christian Rosenkreuz to his cottage. The author leaves us to understand that the hermit, who is eighty-one years old, does not have many more years to live. This last statement seems to contradict the *Fama Ffaternitatis*, which claimed that Christian Rosenkreuz lived to the venerable age of 106. Moreover, other aspects of the narrative depict a Christian Rosenkreuz who is quite at odds with the one presented in the earlier manifestos.

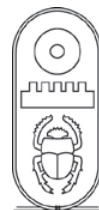
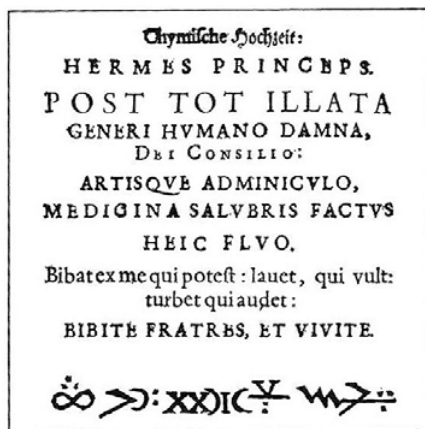
### A Baroque Opera

As Bernard Gorceix has remarked, Andreae's work bears the imprint of seventeenth century culture, that of the Baroque, where allegory, fable, and symbol occupy a preeminent place. According to Gorceix, this novel is a significant historical

and literary work. It is, in fact, one of the best examples of the emergence of the Baroque in the seventeenth century. The taste for the marvelous and the primacy of ornamentation are quite apparent.<sup>8</sup> The castle where the wedding takes place is sumptuous, and its gardens reflect the era's interest in parks adorned with fountains and automatons.<sup>9</sup> They serve to embellish many scenes in the story – most memorably that of the judgment in which the guests, one by one, put themselves in a balance that weighs their virtue. The author also has us witness strange processions of veiled maidens who are barely perturbed by the arrows shot by a rather undisciplined Cupid. Moreover, we encounter such fabulous animals as unicorns, lions, griffins, and the phoenix.

The costumes of the various characters are luxurious, and during the narrative some of them change from black to white and to red, according to the stage of alchemical transmutation in progress. Various feasts and banquets,

served by invisible valets, punctuate the narrative. Music, often played by invisible musicians, accompanies the narration. Trumpets and kettledrums mark the changes in scenery or the entrance of characters. The text is sprinkled with poems, and the general plot is interrupted by a play. Nor is humor absent from this alchemical treatise. It manifests at often unexpected moments, as for example in the episode of the judgment (third day), which gives rise to several broad jokes. At the moment when the transmutation is virtually achieved (sixth day), the director of the operations tricks the guests into believing that they are not going to be invited to the final phase of the work. After seeing the effects of the joke, its perpetra-



tor laughs so hard that “his belly was ready to burst.” The narrative involves hidden inscriptions and a riddle in ciphers which Leibniz tried to fathom. As can be seen, we are face to face with a literary work of great opulence, and in a style very different from that of the *Fama Fraternitatis* and *Confessio Fraternitatis*.

### Inner Alchemy

In 1617, the year following the publication of the *Chymical Wedding*, the alchemist Ratichius Brothoff published *Elucidarius Major*, a book in which he tried to establish the correlations between the seven days of the *Chymical Wedding* and the stages of alchemical work. He acknowledged, however, that Andreae’s text is obscure. In more recent years, other authors, such as Richard Kienast (1926) or Will-Erich Peuchkert (1928), did their best to decipher the mysteries of this text. More recently, Bernard Gorceix, Serge Hutin, and Roland Edighoffer in particular analyzed this work judiciously.<sup>10</sup> The text of the *Chymical Wedding* barely resembles the works of the alchemical corpus. It is not at all a technical treatise, and its object is not to describe the operations in a laboratory. And we should note in passing that the story does not involve developing the Philosopher’s Stone, but of producing a couple of homunculi. In regards to the seven days described in the tale, it is essentially at the beginning of the fourth day that alchemical symbology occupies center stage.

Paul Arnold tried to show that the *Chymical Wedding* was simply an adaptation of Canto X of *The Faerie Queene* by Edmund Spenser (1594), which describes the Red Cross Knight. Yet his argument is hardly convincing. For his part, Roland Edighoffer showed that Andreae’s story bears a striking resemblance to *Clavis totius philosophiae chymisticae*,<sup>11</sup> a work by Gerhard Dorn, a follower of Paracelsus. This book was published in 1567, and then

included in the first volume of *Theatrum chemicum*, published by Lazarus Zetzner in 1602.<sup>12</sup> In this text, Dorn indicates that the purification carried out on matter by the alchemist should also be accomplished on people. His book presents three characters who typify the different parts of human beings: body, soul, and spirit. While at a crossroads, the three have a discussion regarding what route they should follow so as to reach three castles situated on a mountain. The first of these castles is made of crystal, the second of silver, and the third of diamond. After several adventures and a purification at the Fountain of Love, these characters attain the seven stages which mark the process of the inner regeneration of being. There is a striking resemblance between the basic plot of this story and that of the *Chymical Wedding*.



**The Spiritual Wedding**

In the epigraph to his book, Andreae indicates that “the mysteries are demeaned when revealed and lose their power when profaned.” Indeed, the initiatic mysteries lose their virtue when they merely pass through the filter of the intellect. Under



these circumstances, how can we analyze the work that interests us here without stripping it of its virtues? We do not make the claim that we can reveal all of the arcana, but we feel that three important themes presented in Andreae's initiatic novel need to be emphasized: the wedding, the mountain of revelation, and the seven stages of the work.

The sacred wedding, the hierogamy, occupies an important place in the ancient mysteries. In Christianity, with Saint Bernard of Clairvaux (1090-1153), this subject was elaborated upon in his commentaries on the *Song of Songs*. In his treatise *On the Love of God*, he described the journey of the soul towards the higher spheres, with the final stage being that of the spiritual marriage. This symbolic system was developed in greater detail by the Rheno-Flemish mystics, notably with the Beguines and Jan van Ruysbroeck, author of *The Adornment of the Spiritual Marriage* (1335). Among numerous other authors, such as Valentin Weigel, the theme of the spiritual marriage is associated with that of regeneration and rebirth. Among the latter, alchemical symbolism is added to that of Christianity.

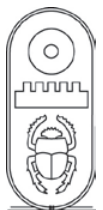
The royal wedding generally occupies an important place in alchemy, and psychologist Carl Jung showed that it was particularly well suited for describing the phases of the process of individuation. The wedding of the king and the queen represent the union of the two polarities of being, the *animus* and the *anima*, leading to the discovery of Self. Jung set forth his research in many books, of which the most representative is *Psychology and Alchemy* (1944). However, it was in *Mysterium Coniunctidnis, An Inquiry into the Separation and Synthesis of Psychic Opposites in Alchemy* (1955-56), that Jung's investigations are thought to have reached their greatest development. In this work, the *Chymical Wedding* of Christian Rosenkreuz is a key

element in his thinking. Contrary to what the title suggests, Andreae's narrative does not speak of a wedding. The marriage ceremony is not described in the novel, but rather its action revolves around the resurrection of a king and a queen. As with Saint Bernard and the mystics of previous eras, it is the wedding of being, understood as a regeneration that Andreae refers to in his book.

### The Castle of the Soul

The wedding location is on a mountain. In traditional symbology, this place, the point where the earth and sky touch, is the abode of the deities and of revelation. As has been so well demonstrated by Marie-Madeleine Davy in *La Montagne et sa symbolique* (The Mountain and its Symbolism),<sup>13</sup> when a person determines to climb the mountain, he or she sets out on the quest for self and embarks on the ascent toward the absolute. The invitation brought to Christian Rosenkreuz indicates that he must reach the summit of a mountain crowned by three temples. However, in the following episode of the narrative, castles are mentioned instead.

Christian Rosenkreuz passes through two portals and arrives at the castle where preparations for the great transmutation are taking place. Then, it is in a third place, in a tower situated on an island, that the Great Work is accomplished. We find here the theme of the castle of the soul spoken of by Meister Eckhart (1260-1328) and Theresa of Avila (1515-1582). For them, the quest of the soul is often presented as the conquest of a castle. Alchemical texts combine the two elements in describing a castle on a mountain. We previously observed that Gerhard Dorn spoke of three castles on a high mountain. Whether mountain, castle, temple, or tower, all of these symbolic elements in our narrative are meant to conjure up the notion of a journey and an ascent.





Yet the temple or castle situated on a high mountain also has an eschatological aspect by recalling the temple to come which Ezekiel spoke of in his visions. After the destruction of the temple and the city of Jerusalem, the Jews were deported to Babylon, and it is then that Ezekiel prophesied the vision of the future temple. He drew a parallel between the exile of the Jews and the expulsion of humanity from Paradise. This destruction of the temple brought about the retreat of God from Creation, God then becoming the only “place” where humans could worship. However, Ezekiel announced the establishment of a new temple, a third, which would coincide with the restoration of Creation. The prophet described this as being situated on a “high mountain,” and he declared that the archetype of this temple existed previously in the super-

terrestrial world. This vision greatly influenced the Essenes and was the source of all apocalyptic literature.<sup>14</sup> We are reminded of the importance of the vision of Ezekiel’s temple in Simon Studion’s *Naometria*, and, as previously mentioned, we know that Andreae also had the opportunity to work on this subject with Matthias Hafenerfer (see above, “Johann Valentin Andreae”). Moreover, as Roland Edighoffer has shown, the *Chymical Wedding* includes many eschatological aspects. It is surprising to note that we will soon encounter this idea of an eschatological temple with Robert Fludd. For him, the mountain on which the temple is erected is none other than that of initiation.

### The Seven Stages

In the *Chymical Wedding*, the number seven plays a fundamental role. The action unfolds over seven days; seven virgins, seven weights, seven ships are described; and the final transmutation takes place in an athanor which sits enthroned in a seven-story tower. Although this may not always be the case, alchemists generally divide the process of the elaboration of the Great Work into seven phases. Gerhard Dorn talks about the seven degrees of the work. Here we encounter a fundamental theme which is far from being unique to alchemy. As Professor Ioan P. Couliano has shown, the theory which states that the process of the elevation of the soul encompasses seven stages is found in numerous traditions.<sup>15</sup> His researches indicate that according to a Greek tradition also found in Dante, Marsilio Ficino, and Pico della Mirandola, these ascents toward ecstasy are accomplished through the seven planetary spheres. Couliano also noted another form of ascent following a tradition dating back to Babylonia, and which later passed into Jewish and Judeo-Christian apocalyptic literature, as well as Islam. Without making reference to the planets, it also speaks of seven stages to spiritual ecstasy.

This element is also found in Hermeticism. The *Poemandres*, the first treatise of the *Corpus Hermeticum*, after having touched upon the cosmogony and the fall of humanity, speaks of the seven stages of the soul's ascent through the framework of the spheres. It describes the seven zones that the soul, after the dissolution of the material body, must pass through so as to purge the self of its defects and illusion before ascending toward the Father.<sup>16</sup> It is interesting to note that the tenth treatise, which provides a summary of the Hermetic teachings, reconsiders the ascent toward the Divine by defining it as the "ascent toward Olympus." Is it not striking that, in the *Chymical Wedding*, the tower where the seven alchemical phases are accomplished is appropriately called the Tower of Olympus?

### **The Seven Days of the Wedding**

#### *1st Day, Preparation for the Departure:*

The heavenly invitation – The prisoners of the tower – The departure of Christian Rosenkreuz for the wedding.

#### *2nd Day, Journey to the Castle:*

The crossroads of the four paths – The arrival at the castle and the passage through the three gates – The banquet at the castle – The dream.

#### *3rd Day, The Judgment:*

The judgment of the unworthy guests – The bestowal of the Golden Fleece on the chosen – The execution of judgment – The visit to the castle – The weighing ceremony.

#### *4th Day, The Blood Wedding:*

The fountain of Hermes – The bestowal of a second Golden Fleece – Presentation to the six royal personages – The theatrical presentation – The execution of the royal family – The departure of the coffins on seven ships.

#### *5th Day, The Sea Voyage:*

The mausoleum of Venus – The false interment of the royal personages – The sea voyage – The arrival on the island – The seven-story tower – The laboratory.

#### *6th Day, The Seven Phases of Resurrection:*

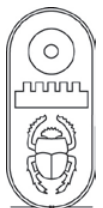
The drawing of lots – The ceremony around the fountain and cauldron – The suspended globe – The white egg – The birth of the bird – The decapitation and incineration of the bird – The circular furnace – The fabrication of two figurines from ashes – The spark of life – The awakening of the royal couple.

#### *7th Day, The Return of Christian Rosenkreuz:*

The Knights of the Golden Stone – The return by ship – The punishment inflicted on Christian Rosenkreuz – His return home after his pardon.

This septenary concept is also found in the Christian tradition, notably with Saint Bernard, who was highly admired by Andreae. The dream recounted on the first day of the *Chymical Wedding* derives its theme from Saint Bernard's sermon for the fifth Sunday after Pentecost. In this dream, Christian Rosenkreuz is locked away in a tower in the company of other people. Moreover, the tools which the wedding guests receive for going from one floor to another in the Tower of Olympus (sixth day) – a rope, ladder, or wings are taken from the symbology of Saint Bernard.

We find reference to the seven stages of the inner life among two individuals praised by Andreae. The first, Stephan Praetorius, the pastor of Salzwedel, speaks of "*justificatio, santificatio, contemplatio, applicatio, devotio, continentia, beneficentia.*" The second person is Philip Nicolai (1556-1608), a pioneer of the "new piety," who, when speaking of the mystic wedding, describes the seven phases which mark the regeneration of the soul (*The Mirror of the Joys of Eternal Life*, 1599).



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## Knight of the Golden Stone

At the end of the seventh day of the *Chymical Wedding*, Christian Rosenkreuz is dubbed “Knight of the Golden Stone.” This title gives him mastery over ignorance, poverty, and illness. Each knight takes an oath in promising to dedicate the Order to God and his servant, Nature. In effect, as Johann Valentin Andreae indicates, “Art serves Nature” and the alchemist participates as much to his own restoration as that of nature. In a register, Christian Rosenkreuz inscribed these words: “The highest knowledge is that we know nothing.” This phrase refers to the “learned ignorance” preached by Nicholas of Cusa (1404-1464). The latter, part of a tradition including Proclus, Dionysius the Areopagite, and Eckhart, opposed rationalistic logic. “Learned ignorance” does not consist of, as often thought, the rejection of knowledge, but the recognition that the world, being infinite, cannot be the object of complete knowledge. Nicholas of Cusa advocated a gnosis, an illuminating knowledge, one capable of surpassing the world of appearances by understanding the coincidence of opposites.

In conclusion, the *Chymical Wedding* of Christian Rosenkreuz is an initiatic narrative, that of a person’s quest on the way to the marriage with one’s soul. This ascent of the soul is part of a process encompassing both humanity and nature. When reading the book, we are struck by the richness of the language which testifies to the erudition of its author. Indeed, it would take an entire volume to point out all of the references to mythology, literature, theology, and esotericism. We have only made a brief sketch here of this marvelous story. Rather than explain its various meanings, our primary aim has been to motivate you to read or reread this work that is fundamental to the Rosicrucian tradition and occupies a prominent place in the history of European literature.

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## End Notes

1. *Aspects de la tradition alchimique au XVII<sup>e</sup> siècle*, acts of the international conference of the university of Reims-Champagne-Ardennes on 28-29 November 1996, under the direction of Frank Greiner, *Chrysopoeia* (Paris: Arch 1998) p. 11.
  2. Romans 8:19-22.
  3. Bernard Gorceix, *Alchimie* (Paris: Fayard, 1980).
  4. We find here numerous references to *Lexicon Alchemiae* by Martin Rulland (1612). English edition: *A Lexicon of Alchemy*, by Martin Rulland the Elder. A. E. Waite, translator (London: J. M. Watkins, 1964).
  5. Roland Edighoffer, *Rose-Croix et société idéale selon Johann Valentin Andreae*, vols. I and II (Paris: Arma Artis, 1982 and 1987).
  6. Edighoffer, *Rose-Croix et société idéale. . . , ibid.*, vol II., brings together his entire bibliography: books, translations, editions, correspondence, and manuscripts, pp. 761-781.
  7. The Golden Fleece is a symbol which designated the Great Work. A fascinating work regarding this subject was written by Antoine Faivre, *Toison d’or et Alchimie* (Paris: Arche 1990). English edition: *The Golden Fleece and Alchemy* (Albany NY: State University of New York Press, 1993).
  8. Bernard Gorceix, *La Bible des Rose-Croix*, introduction (Paris: Presses Universitaires de France, 1970) pp. XXXVIII.
  9. Regarding this subject, see the work of Salomon de Caus, *Hortus Palatinus* (1620) and in particular the reissue of *Le Jardin Palatin* (Paris: Éd. du Moniteur, 1990), with a postscript by Michel Conan which places S. de Caus in the Rosicrucian movement of Heidelberg.
  10. We will not mention here the rather fanciful commentaries of numerous other authors.
  11. Roland Edighoffer, *Les Rose-Croix et la crise de conscience européenne au XVII<sup>e</sup> siècle* (Paris: Dervy, 1999) pp. 282-302.
  12. See Marie-Louise von Franz, who, in *Alchimie et imagination active* (La Fontaine de Pierre, 1978) provides numerous excerpts of this text. English edition: *Alchemical Active Imagination*. Rev. ed. (Boston Shambhala, 1997).
  13. Paris: Albin Michel, 1996.
  14. This idea was developed by Shozo Fujita, *The Temple Theology of the Qumran Sect and the Book of Ezekiel: Their Relationship to Jewish Literature of the Last Two Centuries B.C.* (Ann Arbor: UMI, Bell & Howell, 1970). (Princeton Thesis, 1970). Henry Cordin summarized it in a chapter of his book *Temple et Contemplation* (Paris: Flammarion, 1980) pp. 307-422. English edition: *Temple and Contemplation*. Philip Sherrard and Liadain Sherrard, translators (London: KPI in association with Islamic Publications, 1986).
  15. See his book *Expérience de l’extase* (Paris: Payot, 1984), with a preface by Mircea Eliade.
  16. *See Hermes Trismegiste, I, Poimandres* (Paris: Belles Lettres, 1991) pp. 15-16. English edition: *Hermetica: The Greek Corpus Hermeticum and the Latin Asclepius in a new English translation*, with notes and introduction by Brian P. Copenhaver (Cambridge: Cambridge University Press, 1995).
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# THE ALCHEMY EXHIBIT AT ROSICRUCIAN PARK

*Dennis William Hauck, FRC, Ph.D.*

## ALCHEMY



Recently Rosicrucian members and guests joined Grand Master Julie Scott and Frater Dennis William Hauck for the dedication of the Alchemy Exhibit at Rosicrucian Park. This exhibit presents an introduction to Alchemy, an important part of the Rosicrucian Tradition, and leads guests through the seven steps of the alchemical process. It also includes a reproduction of a medieval Alchemist's Workshop, a copy of *The Ripley Scroll*, and a meditation chamber featuring the "Azoth of the Philosophers" image.

This exhibit, on display in the Rosicrucian Egyptian Museum, will serve as the centerpiece for the new Alchemy Museum at Rosicrucian Park, once the funds for the museum are raised. The Rosicrucian Alchemy Museum will be the first alchemy museum in the United States and the largest Alchemy Museum in the world.

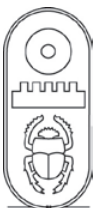
*This article presents some of the text from the Alchemy Exhibit panels.*

### INTRODUCTION: THE EMERALD TABLET

#### The Origins of Alchemy in Ancient Egypt

The roots of alchemy are buried in the fertile black dirt of the Nile delta. In fact, the very word "alchemy" comes from the Arabic *al-khemiya*, which literally means "the black soil of Egypt." From Alexandria, the teachings of alchemy spread throughout the Mediterranean region, Arabia, Europe, and on to India and China. These teachings are summarized in the Emerald

Tablet, which is the core text of alchemy. In simplest terms, alchemy is the Art of Transformation. It attempts to unveil the universal principles behind growth and change. The focus of this work, known as the Great Work, is not limited to the physical world but encompasses all levels of reality, including the psychological and spiritual realms.



## 1. CALCINATION

### Working with Fire

The first step in alchemical transformation is called **Calcination**, which is a process of decomposition in which a substance is reduced to ashes or powder by heating, drying, or crushing it. The tools of Calcination include furnaces, ovens, burners, crucibles, mortar/pestles, and grinders. The goal is to destroy the outer form of a substance to reveal its basic ingredients. In spiritual alchemy, this step seeks to get beyond ego and personality to reveal one's true identity or soul. Calcination marks the beginning of the chaotic Black Phase in alchemy, during which existing structures and habits are destroyed. A triangle pointing upward is the cipher for **Fire**.

## 2. DISSOLUTION

### Working with Water

The second step in transformation is called **Dissolution**, which continues the process of decomposition begun in the previous operation. During Dissolution, a substance is broken down by immersing it in a liquid solvent such as water, acid, or a caustic solution. Tools for Dissolution include pots, kettles, cauldrons, baths, flasks, goblets, ladles, and jars. In spiritual alchemy, Dissolution works to free the feminine essence of Soul, while Calcination works to free the masculine essence of Spirit. Dissolution is the final process in the disruptive Black Phase of alchemy. A triangle pointing downward is the cipher for **Water**.

## 3. SEPARATION

### Working with Air

The third step in alchemy is called **Separation**, which is a process of isolating basic ingredients in a substance and removing impurities. Methods include cutting, breaking apart, sifting, filtering, settling, skimming, evaporating, bubbling,

and layering. The tools used are knives, scissors, filters, sieves, settling jars, and evaporating dishes. The goal is to discard unwanted materials and keep only the most active parts. Separation begins the White Phase, in which substances recovered from the first two operations are purified to reveal their essences. In spiritual terms, these essences are Soul and Spirit. The cipher for **Air** is a triangle pointing upward with a horizontal line drawn through it.

## 4. CONJUNCTION

### Working with Earth

The fourth step in transformation is called **Conjunction**, which is a merging of two different compounds to create an entirely new substance by melding, bonding, compounding, amalgamation, or precipitation. Tools used are mixing bowls, reaction vessels, compounding jars, smelters, and tanks. Alchemists viewed Conjunction as a sacred marriage of opposites that marked the turning point from the operations below in the material world to the spiritual operations above. The cipher for the element **Earth** is an inverted triangle with a horizontal line drawn through it.

## 5. FERMENTATION

### Working with Sopic Sulfur

The fifth operation in alchemy is **Fermentation**, which is the beginning of the Red Stage of empowerment. Fermentation starts with the death and decay of plant material in an airtight container. This stimulates the growth of bacteria that convert sugars in the cells into gases, oily compounds, and alcohol. The alcohol represents the spirit of the plant, while any oil that surfaces is the soul of the plant. Its dead body is the stems and skins that sink to the bottom. These essences are known as the "Three Essentials" of Sulfur (Soul), Mercury (Spirit), and Salt (Body). They were sometimes referred to as "Philosophic" (or "Sopic") substances.

## 6. DISTILLATION

### Working with Sophic Mercury

The sixth step in transformation is **Distillation**, in which the products of the previous operations are purified and concentrated. The tools of distillation include retorts, alembics, cucurbits, vaporizers, aludels, sublimators, condensers, stills, boilers, and heaters. Distillers consist of a lower boiling vessel, an upper condensing vessel, and a long condensing tube leading to a receiver. Vapors from a boiling liquid rise into cooler sections of the still where they begin to condense. Distillation continues the Red Phase of alchemy, in which essences are potentized and empowered. The more times a solution is distilled, the purer and more concentrated it becomes.

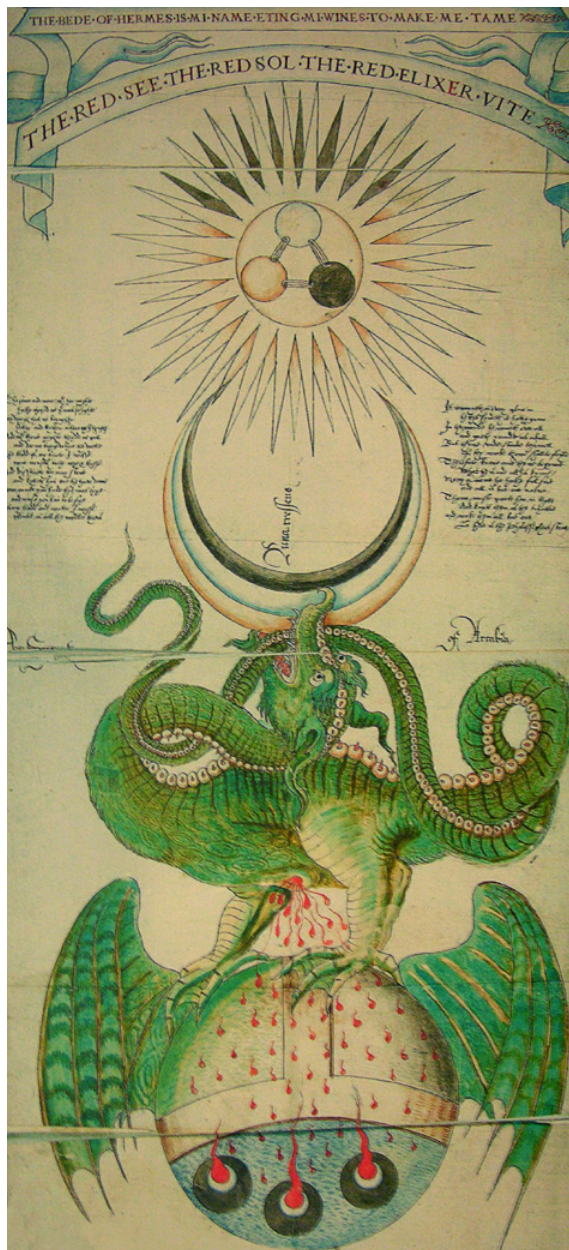
## 7. COAGULATION

### Working with Sophic Salt

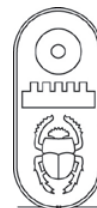
The final step in transformation is called **Coagulation**, which is a process of materialization in which substances congeal, consolidate, agglomerate, or precipitate into a solid mass. The alchemists saw this operation as working with a higher kind of Salt, a new type of spiritized matter that could not be perfected any further. “Thus you will obtain the Glory of the whole Universe,” says the Emerald Tablet of this step. The new Salt would be found in the unburnable ashes from fire or in the indissoluble crystals in water. It would come from the union of the Red and White, from the forces of Spirit and Soul. They called this magical Salt the “Philosopher’s Stone.”

### THE RIPLEY SCROLL

This enigmatic scroll was created around 1450 by English alchemist Sir George Ripley. It is an illustrated allegorical poem that reveals how to make



the Philosopher’s Stone. The work starts with the First Matter, symbolized by the Black Toad in the retort. The first two panels are about breaking down the First Matter to release its essences. This makes the Black Toad discharge a venom that causes color changes and produces a series of lesser stones. The next two panels combine the products already created into a single object, which is now digested and transformed in the “blood of the dragon.” This leads to the projection of alchemical energies into the outer world.



## THE ALCHEMICAL WORKSHOP

This painting below by Rembrandt (1606-1669) portrays all aspects of the **alchemist's workshop**. The interplay of light and darkness, Above and Below, spiritual and material, in this painting captures what it feels like to be in the presence of a master alchemist. The alchemist's desk is the focus of his preparation before he begins the practical work in the lab. The athanor, a tall brick or cast iron furnace, is where transformations take place. Distillation is an important process and several sizes of glass, ceramic, and copper distillers were used. Many medieval labs had dried carcasses of crocodiles, fish, and small mammals dangling from the ceiling, as well as boughs of herbs hung up to dry. Large processing equipment included fermentation crocks, digesting vats, washing troughs, soaking barrels, storage kegs, and huge boiling vessels and retorts made of earthenware, copper, or glass.

## CONCLUSION: THE OCTAVE OF CREATION

### The Operations of Alchemy and the Music of the Spheres

Pythagoras (571-495 BCE) believed the universe was created from a series of increasing vibrations he called the Music of the Spheres. The frequency of each note on his scale is a multiple of the perfect fifth, a 3:2 ratio that represents order out of chaos. Renaissance alchemists associated the seven notes of the Pythagorean scale with the Ladder of the Planets corresponding to successive levels of perfection in the Great Work. Each step up from the heavy dark Black Phase, through the clarity of the White Phase, to the final empowerment of the Red Phase, represents an increase in the energetic frequency of the substance. When the transmutation is complete, the substance is reborn at a higher level of vibration into a whole new octave of creation.





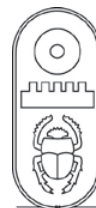


## AZOTH OF THE PHILOSOPHERS

This emblem by the fifteenth century monk Basil Valentine shows the operations of alchemy as rays on a star of transformation, at the center of which is the face of the alchemist. Beginning at Calcination (black ray 1), we move through Dissolution (ray 2), Separation (ray 3), Conjunction (ray 4), Fermentation (ray 5), Distillation (ray 6), and finally Coagulation (ray 7). The roundels between the rays elaborate on each operation.

The Four Elements are indicated by the outstretched limbs of the alchemist, while the Three Essentials are depicted in the large triangle behind him. In the background can be seen the opposing forces of King and Queen (Spirit and Soul) that are united in the work. We can see that at the beginning there is just one bird, which does not discover it has a soul until the second operation reveals it. Afterwards, the birds of soul and spirit work together.

The five stars surrounding the cube in the *Corpus* ray stand for the Fifth Element or Quintessence, which is found in the body and represents spirit or life force. At the beginning of the Work, the Quintessence is trapped in black matter at the very bottom of the drawing and is raised through the purifying processes of alchemy to become the winged Ascended Essence at the very top.



## MEDITATION

The *Azoth of the Philosophers* is a meditative mandala used by alchemists to apply the operations of alchemy to their personal transformation.

Focus your attention on the face of the alchemist. The triangle over his face signifies divine grace raining down, so we see within this triangle a union of the divine mind with the mind of the alchemist.

Each ray on the star shining out from the alchemist represents a metal from lead to gold. The circled scenes – called “roundels” – depict what must be done to transform the metals.

The outer ring has a Latin instruction that says: “Visit the innermost parts of the earth, and by rectifying them, you will find the hidden Stone.” The first letter of each word spells out “vitriol,” which is sulfuric acid. Alchemists believe a similar liquid fire exists within themselves and call it their “Secret Fire.”

The large triangle behind the ring stands for the three forces of creation, which we know today as matter, energy, and light. Alchemists refer to them as the Three Essentials of Salt, Sulfur, and Mercury.

Salt (or *Corpus*) is matter, symbolized by the cube. Sulfur (or *Anima*) is energy, symbolized by the Sun and salamander living in fire. Mercury (or *Spiritus*) is light, symbolized by the light of the Moon and the bird of spirit about to take wing.

The alchemist’s body emerges from the Three Essentials and is composed of the Four Elements. In his right hand is a torch of Fire, and in his left a feather, signifying Air. His right foot is planted on Earth, and his left is in Water.

To the alchemist’s right, the jovial, solar King sits on a lion and holds a scepter and shield, indicating his authority over the visible world. But the dragon of his unconscious hides in a cave, ready to attack should he grow too prideful.

To the alchemist’s left, the melancholy, lunar Queen rides a great fish in the sea. She carries a chaff of wheat, symbolizing her connection to fertility and growth. The bow and arrow she cradles represents the wounds of body and heart she accepts as part of life.

In simplest terms, the King and Queen are the polarities of our existence – aggressive and passive, masculine and feminine, our thoughts and emotions – that must be reconciled before we can achieve unity and wisdom.

Now move to the black ray number 1. It carries the cipher for both the planet Saturn and the metal lead. The smaller square denotes the Three Essentials principle of Salt. The goal is to overcome the lethargic, dark, heavy spirit of lead and begin the journey of transformation.

Moving clockwise, the first roundel is marked by the Latin word *Visita*, which means to begin a journey. The black crow sitting on a skull is the classic symbol for the Calcination operation, which uses the element Fire to burn away old structures and habits. On the personal level, the skull signifies the death of ego to reveal the true, inner self.

Ray number 2 has the cipher for both Jupiter and tin. The goal is to free the trapped energy in lead and transmute it into shiny, untarnishable tin. On the personal level, the work involves the purification and control of feelings and emotional energy.

The second roundel depicts the operation of Dissolution, which works with the element Water to dissolve materials. This step is marked by the word *Interiora*, which means to work with the innermost parts of the psyche. It shows the black crow watching its white, purified soul emerge from the dark waters.

Ray number 3 is marked with the cipher for both Mars and iron. The smaller cipher denotes the principle of Sulfur or

energy. The goal is to transmute hard, cold iron by exposing it to the feminine influence of copper.

The third roundel shows the operation of Separation, which works with the element Air to spiritize materials. We see the birds of soul and spirit pick through the remains of the previous operations to save the genuine parts. Above this roundel is written *Terrae*, which means “of the earth”, and refers to the essences being separated from the dregs of matter.

Ray number 4 has the cipher for both Venus and copper. The goal is to marry the opposing qualities of copper and iron to create something new. On the personal level, it is the formation of an integrated personality by merging our masculine and feminine sides.

The fourth roundel depicts the operation of Conjunction, which works with the element Earth to create a new incarnation. It shows the birds of soul and spirit lifting the crown of the Quintessence into the heavens. This roundel is inscribed with the word *Rectificando*, which means “to rectify or set right.”

Ray number 5 carries the cipher for both the planet and metal Mercury. An identical smaller cipher indicates the principle of Mercury as light or mind. The goal is to introduce new life into the fetus created by the union of iron and copper.

The fifth roundel depicts the operation of Fermentation, which begins the work with the Three Essentials of Sulfur, Mercury, and Salt. It shows the birds of soul and spirit nesting in a tree, awaiting the hatching of their fertilized egg. The inscription reads *Invenies*, which means “you will discover.” During Fermentation, digesting bacteria create the spirit of alcohol. On the personal level, it is an influx of inspirational energy into the psyche.

Ray number 6 is marked with the cipher for both the Moon and silver. The goal is to purify materials by heating them and condensing the vapors. On the personal level, it means repeated reflection and elevation of our thoughts and feelings.

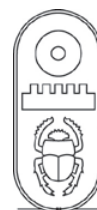
The next roundel depicts the operation of Distillation. It shows a unicorn resting next to a rose bush. The unicorn symbolizes sublimation of physical desires, and the rose is the purest flower. Above the roundel is the word *Occultum*, meaning “hidden,” since the essences at this stage are usually cloaked in vapors.

Ray number 7 carries the cipher for both the Sun and gold. The goal is to let go of old structures and allow the final transmutation to take place.

The final roundel depicts the operation of Coagulation and shows an androgynous youth emerging from a womblike grave. It is inscribed with the word *Lapidem*, meaning “the Stone”, which refers to the birth of the Philosopher’s Stone.

At the top of the ring, above the crown of Quintessence, is a winged figure known as the Ascended Essence. It signifies the completion of the spiritual work. The soul, now perfected, is ready to take flight to a whole new level of being.

Now that you understand the meaning of these symbols, you can work through the *Azoth* at your own pace. Just start with the face at the center and realize that *you* are now the alchemist.



# DREAMS

*From a Rosicrucian Manuscript*

According to the most recent scientific research, dream activity constitutes a considerable part of our conscious life. Many experiments show, in fact, that almost one-fifth of our sleep is spent dreaming. Experts in dream research tell us that this activity is as necessary to our mental balance as air and food are to our physical well-being. They feel that dreams fulfill a vital function and that their total absence could result in mental illness or, in extreme cases, death. They further state that dreams provide an outlet for impulses that have been repressed during the day and they allow people to rid themselves of certain tensions that could eventually create a serious inner imbalance.

Thus, these researchers affirm that dreams constitute a form of psychological self-adjustment which is indispensable to human health. They state that a deficiency of dream activity can result in various types of mental derangement, much as a deficiency of protein will result in physiological problems.

Psychiatrists and psychologists, for their part, add that the contents of our dream life offer the best source of information about the deeper aspects of our personality. In their words, "it furnishes a living picture of our present existential state." This viewpoint is also found in the definition that Jung gives to dreams.

According to him, each dream is a spontaneous and symbolic representation of the current state of our unconscious.

Generally speaking, what scientists say about dreams is basically correct. Their analysis is incomplete, however, in that their research has been focused almost

exclusively on the corresponding mental processes. Keep in mind that dreaming is not a function of the brain, but of consciousness. This means that even a person who has been deprived of brain functions will dream, whether or not it can be proven with an electroencephalogram. Furthermore, while it is true that many of our dreams are formed from impressions originating in our subconscious, others are derived directly from our psychic self. This means that our dream activity is not simply limited to exchanges taking place between our subconscious memory and our brain activities. If it were, dream interpretation would never have become an art to be practiced by mystics throughout history.

We previously indicated that everyone is in a state of projection while asleep, as the psychic body is separated from the physical body at that time. The plane upon which we are located when we project is determined by our spiritual aspirations and degree of evolution, and this plane carries with it different impressions which become part of our dreams in a more or less vivid manner. When our dreams are particularly inspiring, we may think of them as the expression of our very soul, for the soul itself gives rise to such impressions. They come to us as special visions, contacts with other entities, messages in symbolic form, music, or liturgical chants, etc. Dreams that lack this inspiring nature can be considered products of activity belonging to the lower levels of the subconscious.

From a mystical viewpoint, therefore, dreams are not simply the expressions of our subconscious life and the means by which we rid ourselves of certain tensions. For someone who can interpret them correctly, they are a way of piercing the



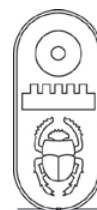
mysteries of the unseen by making use of the psychic plane, the plane upon which we are located while asleep. For this reason, ancient tradition has always accorded considerable importance to dreams.

Oneiromancy, or the art of foretelling the future through the interpretation of dreams, was a standard practice in the temples of ancient Egypt. Lector priests and scribes were responsible for interpreting the dreams of those who came to them for this purpose, as dreams were highly regarded as valuable premonitions. We find, in fact, in an Egyptian wisdom book, the following words: “Divine Intelligence created dreams to show people the way when they cannot see the future.” It was thought, moreover, that they constituted in themselves initiations into the afterlife.

Dreams can be divided into three major categories: physical, psychological, and mystical. In the first category are those that arise because of an indisposition of the physical body. This condition may originate either because of outside influences or because of physiological disturbances. For example, experiments have proven that an uncomfortable bed, an overheated or underheated bedroom, a persistent noise, or a constant draft, are all elements that affect our dream activity. For instance, people who frequently sleep in a cold bedroom will have recurring

dreams of being in situations where they are cold. In keeping with these outside influences, you know all too well how when you are overtired or when you have eaten unwisely or too much, that your dreams will reflect this situation. They will not be at all mystical in character, in that they are most often accompanied by disagreeable impressions and may even result in nightmares. This is because they are chiefly the subconscious expression of our physical state.

The second category of dreams constitutes those relating directly to our current mental and emotional state. They may take the form of scattered ideas, including “flashes” of things we did during the day or in the hours before bedtime. Sometimes they are the projection of especially vivid scenes we have witnessed or of particularly intense discussions we might have participated in fairly recently. They can also be the reflections of the fears, anxieties, or worries associated with our professional or family life. This category of dreams most clearly mirrors an individual’s psychological balance or imbalance. These dreams are also most closely linked to our subconscious, as they have their origin in the two major attributes of the subconscious: perfect memory and deductive reasoning. We suggest that you review the discussion of this subject that is found in the monographs of the Second Temple Degree.



The third category is comprised of dreams that are mystical in nature. These dreams are under the impulse of the soul, and we experience them through the intermediary of the psychic body which is in a state of projection during sleep and is thus capable of perceiving impressions belonging to the unseen world. Such dreams are far more rare than the others in that they occur when dream activity has not already been initiated by the first two categories. Thus, people who are always in the habit of eating too much food in the evening or of going to bed in a state of anxiety will not bring together the best conditions for making the night a period of cosmic communion. Obviously, people who are interested in spiritual matters will have many more mystical dreams than will more materialistically minded individuals, for their aspirations lift them toward the higher planes while they sleep.

Mystical dreams generally include scenes, messages, and symbols directly associated with our actual experiences, and we may interpret them using meditation or simple reflection. For Rosicrucians, such scenes, messages, and symbols are frequently connected with the teachings we are studying and the importance we place upon our ideals. They may also contain elements taken from the other traditions we are acquainted with. They can also take the form of events that relate particularly to the life of a person who has had a great influence in the realm of spirituality. Whatever their specific content, such dreams always impart a pleasant feeling when we awaken, and we unconsciously feel the desire to remember them. Furthermore, they may continue for several nights, and they tend to return in regular cycles which we should learn to predict and analyze.

One should not necessarily think that all mystical dreams have a precise meaning. Sometimes they are simply experienced

as an inner plenitude, thus indicating a communion with higher cosmic planes. In certain cases, they may open doors to past lives and thus indicate what we were in one of our past incarnations. For instance, people who frequently dream of India, and of Hindu or Buddhist symbolism, probably lived in that country at one time. The psychic body of these people may even be projecting there regularly while they sleep.

Likewise, if a man often sees himself with the features of a woman when he dreams, this may indicate a remembrance of a previous life.

Of course, a dream may really be conveying a message which, depending upon circumstances, includes the solution to a problem, the answer to a question, a premonition of an event, etc. It is important, therefore, that you devote your full attention to interpreting it. You will want to meditate regularly on its content, but without ever making this an obsession. In fact, we must also know how to detach ourselves from such a dream so that it may reveal itself to our consciousness in ways not served by our purely objective faculties.

Many people find it difficult to remember their dreams. This often happens because they get up too quickly in the morning. The best moment for recalling dreams is when we are just between the sleeping state and the waking state. It is during this passage from unconsciousness to consciousness that the recall of one's dream activities must take place. For the best results, you should ideally awaken naturally and gently before your alarm clock rings, but this might be impractical due to your nature or activities. If this is the case, after regaining consciousness of the physical world, do not get up immediately, but remain in bed for a few minutes with your eyes closed, holding the desire to return gently to an intermediate state. This

period of relaxation may be accompanied by concentrating for several minutes on the area around the first cervical ganglion (at the nape of the neck). This type of concentration facilitates dream recall, for this ganglion is directly connected to the pituitary and pineal glands, which are in turn intimately linked to our psychic being and the soul consciousness.

Many books have been written on the symbolism and interpretation of dreams. Some of these works are informative and make worthwhile reading. It is important to understand, however, that any material you find on this subject can only act as a guide, and that its prime value is to lend direction to our research. Dream interpretation must, of necessity, be entirely personal. In other words, except in certain cases where you feel a distinct need, we advise that you refrain from asking another person for help in discovering the meaning of your dreams, for others do not have your personal experience, understanding, inner life, or evolution. They can only interpret your dreams in the light of their experience or their knowledge in this area – such experience and knowledge being necessarily imperfect and limited. Furthermore, many dreams, especially those of a mystical nature, contain a message which concerns you alone. When you confide in others indiscriminately, you are in danger of inhibiting the unfoldment and continuation of these dreams, and thus you deprive yourself of information that might be quite useful to your future evolution.

In closing, we wish to emphasize that dreams truly constitute one of the keys which allow us to pass through the portals of the unseen. Through the medium of dreams, you can learn much more about the spiritual world than you ever would by reading hundreds of books on the subject. For this reason you should grant them the importance they deserve by making every

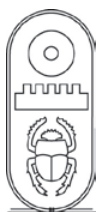
effort to bring together the necessary physical and mental requirements to ensure a profitable night on the psychic plane.

Speaking of this matter, you should know that it is completely possible to direct one's dream activity. To do so, you only need to relax just before falling asleep and visualize a mystical theme about which you would like to dream. Depending upon your aspirations, this visualization might take the form of a symbol, an inspiring landscape, a religious edifice you are particularly fond of, an initiate whose life and work you have studied, etc.

You will also find that keeping a special notebook for your dreams is quite helpful. Take time to jot down the dreams you remember, along with any commentaries you feel inspired to make. Remember to indicate the date and the specific time, if possible, when each dream occurs.

And as mentioned previously, to facilitate the recall of dreams, avoid waking up too quickly. Before rising remain in an intermediate state for several minutes so that you can concentrate calmly and effortlessly on the area around the nape of the neck.

With time and practice, you will notice that some of your dreams recur on a regular basis. In some instances, they correspond to repressions tied to fears or events which have left a psychological mark on you. You should therefore detect these and learn to free yourself from such inhibitions. Other dreams, which are of a truly mystical nature, you will definitely want to meditate upon. Their purpose is mostly to draw your attention to certain points involving your mystical quest or with choices that must be made in directing your life toward the happiness you seek. By paying close attention to such dreams, you will find that they repeat themselves in definite cycles, each time bringing with them new and increasingly precise elements.



# ABOUT THE SOUL

## *Rosicrucian Lesson*

*We present below a sample lesson from the teachings of the Rosicrucian Order, AMORC, which explores the nature of the soul.*



Dear Fratres and Sorores,

The belief in the existence of the soul goes back to the beginning of time, because, as we explained in the Third Atrium Degree, the concept of the soul appeared at the time when humans became conscious of our duality and envisaged the existence of a Supreme Intelligence or of a Transcendental Force. However, during the Egyptian civilization, and more particularly during the New Kingdom, the soul became the subject of a religious cult.

The Egyptians named the soul Ba and represented it in the form of an ibis. But at other times it took the shape of a lotus, a flower growing abundantly all along the Nile. As for the physical body, which was called Khat, the Egyptians symbolized it by a statuette sculpted in human form. This statuette was generally made from wood and adorned the burial chambers of the nobles and pharaohs. In their writings, the initiates of Egypt referred as well to the Ka, that is, the psychic body. For them, the psychic body was like our invisible double and had the power of traveling into the world of the dead, particularly during sleep. This belief reminds us of the subject of projection that was discussed in the Seventh Temple Degree.

**THE HUMAN SOUL:** According to our Order's teachings, the soul of each human being is an individualization of the Universal Soul and, thus, an emanation of Divinity itself. Therefore, it possesses all of Divinity's attributes and characteristics. In other words, the soul is immaterial, immortal, and perfect. In fact, we may consider it to be the expression of the Divine in each human being. The soul is thus the reflection of Divinity's Omnipotence, Omnipresence, and Omniscience. This concept is found in all esoteric traditions and in most religions. Many sacred texts state, in virtually identical wording, that "Human beings were made in the image of the Divine." Naturally, this resemblance applies to our spiritual nature and not to our physical body. Unfortunately, the religious interpretation of this allegory is too often literal and distorts its true esoteric significance. However, it helps us to understand why so many people have an anthropomorphic conception of Divinity.



**THE IMMATERIALITY OF THE SOUL:** People who admit the existence of the soul consider it to be immaterial, that is, invisible and intangible. In other words, they believe, and rightfully so, that it is impossible either to see or touch the soul. Nevertheless, we can feel its presence under certain conditions and at certain moments, particularly at the moment of its incarnation or immediately after transition. When incarnated into humans, the soul arises as a subtle energy that permeates every cell of our being, much as air fills every room in a house.

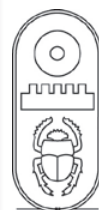
Contrary to what is taught in the lessons of many religious faiths or included in the teachings of certain philosophical schools, the soul is not confined to a specific organ, such as the heart or brain, nor is it found in a particular psychic center, such as the solar plexus or pineal gland. Such unwarranted beliefs are the result of an erroneous understanding of the soul's real nature. As a spiritual essence, the soul animates our entire body.

Here we are using the original meaning of the Latin verb *animare*, “to animate” – namely, “to endow with breath and consciousness.” It is interesting to note that the word soul is associated with the terms *anilas*, *anemos*, and *anima* which in Sanskrit, Greek, and Latin respectively mean “breath,” “wind,” and “vital breath.”

The experiment in Degree 7, No. 4, which consisted of awakening the psychic body by means of deep positive breathing, made us aware of the soul's omnipresence within us. Indeed, when this experiment is done properly, the stimulation felt immediately afterwards is not confined to a single organ; rather, it is manifested with the same intensity throughout the physical body. As we explained in the Seventh Temple Degree, the spiritual aspect of our being occupies the same dimension in us as the psychic aspect, because the second is the direct consequence of the first and cannot exist without it. Therefore, these two aspects are intimately connected and vibrate in harmony within each cell and, as a consequence, throughout our body. To understand human duality properly, we must not limit the nature of the soul by confining it to some part of the body.

**THE IMMORTALITY OF THE SOUL:** When we acknowledge the existence of the soul and recognize its divine origin, we cannot doubt its immortality. As a spiritual energy, the soul is indestructible and unalterable. Therefore, as opposed to matter, the soul is composed of an essence that makes it eternal.

Returning to the ancient Egyptians, it is important to understand that their practice of mummification was not intended to glorify the physical body. They were not trying to immortalize the body when they dried and embalmed it. Rather, they were attempting to prolong the material existence of the deceased, believing as they did in its eventual resurrection, or to help the soul maintain in the hereafter those physical and mental faculties that it possessed during its incarnation. Because of these faculties, the soul was able to “walk” into the realm of the deceased and “see” what was happening. Although this



belief may seem quite primitive to us, it nonetheless indicates how intrigued the Egyptians were by the afterlife and how convinced they were of the soul's immortality. Thus, the initiates of the Mystery Schools understood fully that the soul could not live again in the mummy's body and that its perceptions after death did not depend on those impressions and sensations experienced while on the earthly plane.

It is impossible for anyone to prove that the soul is of an immaterial essence capable of animating every cell of our physical body, and likewise it cannot be demonstrated that the soul is immortal. What we are dealing with is inner conviction and faith, in its noblest sense. However, it cannot be denied that each human is a being conscious of himself or herself and his or her surroundings. Yet, consciousness is an invisible and intangible phenomenon.

Moreover, contrary to what some people believe, consciousness does not exclusively arise from cerebral activity, since the brain is simply the seat of our objective and subjective faculties, that is, of our sensory perception and mental processes. If the brain is either destroyed or damaged because of accident or illness, we will fall into a coma for a certain length of time. Nonetheless, we will continue to live because the vital functions of our body are not under the control of the brain. As you have learned in previous degrees, these functions depend on the subconscious, which in turn is a specific manifestation of Cosmic Consciousness, such as it manifests itself within each individual.

Moreover, it is incorrect to think that a person who is in a comatose state is totally unconscious. Indeed, after coming out of this state, many people were able to explain not only what they had perceived or felt on the spiritual plane, but were also able to describe both their whereabouts and the conversations of people in their presence, even though they seemed completely cut off from any material surroundings. The example of the "clinically dead" is even more significant, because individuals who have experienced this state were revived after having felt a momentary separation between their soul and physical body. As their testimony confirms, this separation does not involve the annihilation of all phases of consciousness. While in this state they knew at every moment who they were as individuals and could perceive with as much realism as when they were on the material plane. In most instances, their experience was so beautiful and moving that it was with much regret that they came back onto the earthly plane.

**THE PERFECTION OF THE SOUL:** As the human soul is an individualization of the Universal Soul and, as such, is an emanation of the Divine, it is by necessity perfect. This means that it is impossible to make it more virtuous or to increase its potential wisdom. Indeed, as an image of its source, the soul is pure, immutable, and absolute. Consequently, it is not our goal to make the soul more perfect in its divine nature, as this would imply that the soul is perfectible.

As we will see in upcoming monographs, our cosmic mission is to become conscious of the soul's spiritual dimension and to express it plainly in all that we think, say, and do. To succeed in this endeavor, we must learn to attune with the inner self and purify our personality of those imperfections which have accumulated over many lifetimes through the improper application of free will. In fact, this progressive purification is based on spiritual alchemy, which each of us has the duty to achieve within our innermost being.

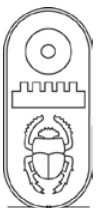
At the conclusion of this spiritual alchemy, our soul will shine at its loveliest and will illuminate our entire existence. We will then live in perfect harmony with the most elevated planes of Cosmic Consciousness, as we will have attained the state of Mastership.

Not only is it impossible for us to perfect our divine nature; it is equally impossible for us to soil, alter, or degrade it. This point must be kept in mind, as many religions teach their faithful that humans corrupt their soul whenever they commit a "sin" – in other words, whenever they do not act according to the dogmas that these religions use to determine what is good or bad within human behavior. Some religions consider that lying, stealing, or acting in some other reprehensible way will tarnish one's spirituality and thus necessitate a purification that is only obtainable after death and after remaining for a certain period of time in a "purgatory." In extreme cases, the "sinner" is condemned to burn in "hell" for eternity, as his or her sins are too grave to be expiated. It is evident that such dogmas do not correspond at all to the reality of the cosmic laws guiding our mystical evolution. In fact, whenever we act contrary to the well-being of others or do not conform to basic aspects of morality, we bring a karmic decree into action that will eventually exact some form of compensation. We will soon see why and how this is.

In keeping with the preceding explanations, each human being is animated with a soul that is immaterial, immortal, and perfect. However, mystics consider the goal of earthly existence to be an evolvment toward perfection. On the surface, these two statements seem to contradict each other. In the next lesson, we will see that this is not so and that they are perfectly reconcilable.

With best wishes for Peace Profound,

Sincerely and fraternally,  
YOUR CLASS MASTER



## Practical Application

During this week, we suggest that you meditate on the contents of the following quotations, as they demonstrate how intrigued the great philosophers were by the nature of the soul.

Those who do not comprehend why the soul contains Beauty within itself seek an outer realization of this beauty through laborious work. Their aim should rather be an expansion of their inner being. Rather than scattering themselves in the Multiple, they should abandon it for the One and thus increase the flow of the divine fountain whose stream flows within them. You can only grasp the Infinite through a faculty superior to reason by entering into a state where you are no longer a finite being, but where the Divine Essence is imparted into you. It is ecstasy. It is the liberation of your consciousness from its finite consciousness.

—PLOTINUS (203–270 CE)

If one will work an inward work, one must pour all one's powers into oneself as into a corner of the soul, and must hide oneself from all images and forms. Then one must come into a forgetting and a not-knowing. One must be in a stillness and silence where the ineffable word may be heard. When one knows nothing, it is opened and revealed.

—MEISTER ECKHART (ca. 1260–1327)

The human mind cannot be absolutely destroyed with the body, but there remains of it something which is eternal. And this something appertains to the essence of the mind; it is conceived by a certain eternal necessity through the very essence of the Divine.

—BARUCH SPINOZA (1632–1677)

Birth, life, death are the states of the soul only . . . .

Consequently, our body only is perishable, the essence of us is not perishable, and must have been existent during that time when our body had no existence. Human life is dual. It consists of two lives – one animal and one spiritual. The first life is the life of spirit; one's soul lives in that life separately from the body, and must live on in it after the separation from the body.

—IMMANUEL KANT (1724–1804)

# NICHOLAS OF CUSA AND THE INFINITE

Thomas J. McFarlane

**N**icholas of Cusa (1401-64) was a philosopher and theologian whose writings influenced the development of Renaissance mathematics and science. The first part of this article traces the historical development in the West of thought about the Infinite prior to the time of Nicholas of Cusa. The second part of the article discusses his philosophy as presented in his major work, *On Learned Ignorance*. The third part of the article then examines the subsequent development of thought about the Infinite and the ways in which Nicholas of Cusa influenced mathematics and science.

## **Preface: A Meditation on the Infinite**

“According to the movement of reason, plurality or multitude is opposed to unity. Hence, it is not a unity of this sort which properly applies to God, but the unity to which neither otherness nor plurality nor multiplicity is opposed. This unity is the maximum name enfolding all things in its simplicity of unity, and this is the name which is ineffable and above all understanding.”<sup>1</sup>

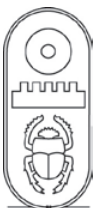
What is the Infinite? To define it as other than the finite is to set the infinite apart from the finite, and thereby limit it. To define the infinite, therefore, is to make it definite, and no longer infinite. In fact, to say anything at all of the Infinite, is to actually say nothing about the true Infinite. Like the Tao, the Infinite that can be named is not the true Infinite. The Infinite, then, is ineffable. ...Or is it? If we think that the Infinite is ineffable, we have once again defined it by distinguishing it from what is not ineffable. The Infinite is so utterly ineffable that we cannot even say that it is ineffable. Even this, however, is saying too much.

The Infinite is paradoxical and contradictory. Yet, while it cannot be defined or represented in rational terms, it is nevertheless profoundly meaningful. The Infinite is a numinous reality that has flooded the human mind with awe

and inspiration for thousands of years. Throughout history, the intuition of the Infinite has been known by equally profound and paradoxical terms: the Absolute, the One, the Unconditioned, the Unlimited, the Indivisible, and the Indefinite. Philosophers have identified it with Reality and Truth. Mystics have called it God, Brahman, Allah, and Tao. On the one hand, the Infinite inspires a sense of a potential for limitless expansion beyond any finite bound. On the other hand, the Infinite also inspires a sense of an actual completeness comprehending everything without any exclusion whatsoever. The former is a view from the finite upward toward the unattainable and incomprehensible infinite, while the latter is an incomprehensible view from the infinite downward toward the finite that is identical with the infinite. As we will see, a dialectical play between these two aspects of our intuition of the Infinite reveals a process of actualization of the Infinite in the history of Western thought.

## **A History of the Infinite Before 1400**

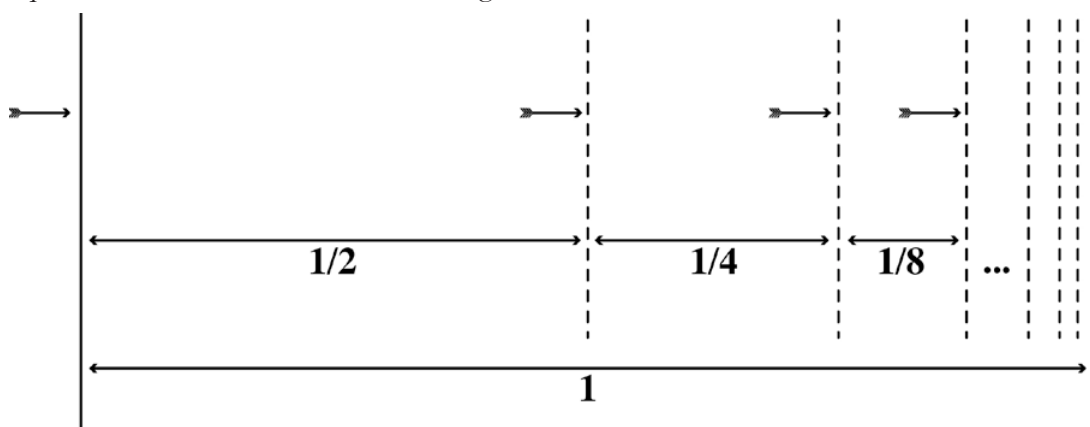
The concept of infinity first appears in the West with Anaximander of Miletus (ca. 610-546 BCE), who proposed that the principle of all things is that which is without any limit (*peras*). This limitless principle is thus called the not-limited (*to aperion*). Because it is without any limit,



all opposites are transcended in *to aperion*, and all conflict between created things is reconciled. Whereas Anaximander viewed *to aperion* as good, Pythagoras (born ca. 570 BCE) viewed *to aperion* as abhorrent, because it is incomprehensible, indefinite, and lacks the harmony and beauty that is present only in the cosmos. Pythagoras taught that all things are number, and that the cosmos is created and governed by comprehensible and definite numerical principles. In the Pythagorean cosmogenesis, the derivation of the multiplicity of things in the world from an original unity is identical to the derivation of the numbers from the numerical unit, one. The Pythagoreans saw in all things combinations of eternal principles, such as Limit and Unlimited, One and Many, At Rest and In Motion. This Pythagorean vision, which sees the material world of becoming as imitating the mathematical world of being, provided the seminal insight at the foundation of Western science, both ancient and modern. A problem with the Pythagorean vision, however, was discovered by the Pythagoreans themselves. If the entire cosmos is constituted and ordered by whole numbers and their proportions, then everything must be comprehensible in terms of integral proportions of other things. This thesis, however, was shown to be false when it was mathematically demonstrated that the length of the diagonal of a unit square is incommensurate with the lengths

of its sides. In modern terms, we might say that the Pythagoreans discovered that the square root of two is not a rational number. The Greeks, however, did not consider geometric magnitudes to be numbers at all. Numbers were discrete integral quantities: 1, 2, 3, etc. that had arithmetic properties of being even, odd, prime and so on. Geometric magnitudes, on the other hand, were continuous spatial objects for which concepts of even and odd had no meaning. Because of the impossibility of expressing geometric magnitudes in terms of arithmetic quantities, the Greeks considered arithmetic and geometry to be fundamentally distinct. This schism in mathematics between the continuous magnitudes of geometry and the discrete quantities of arithmetic was one manifestation of the profound problem of relating the Unlimited and the Limited, the Infinite and the finite. The indefinite and incomprehensible *to aperion* was somehow present in the continuous magnitudes of geometry, and the discrete numbers and their ratios could not represent them.

Zeno developed several famous paradoxes that illustrate the incompatibility between the discrete and continuous. For example, in one variant of Zeno's thought experiments, it is shown that a flying arrow cannot hit its target since it must first travel half way to the target, and then half of the remaining distance, and so on.



In arithmetic terms, if the total distance to the target is 1, then the arrow must first travel a distance of  $1/2$ , then a distance of  $1/4$ , then a distance of  $1/8$ , and so on. After a number  $n$  of such steps, the total distance traveled by the arrow will be  $1/2 + 1/4 + 1/8 + \dots + 1/2^n = 1 - 1/2^n$ . No matter how large  $n$  is, however, this sum will always be less than the total distance to the target, since for any value of  $n$ ,  $1 - 1/2^n < 1$ . Thus, the arrow can never hit its target.

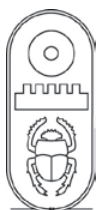
Zeno used this thought experiment to demonstrate the contradictions inherent in attempting to understand the unity of continuous motion in terms of a diversity of discrete comprehensible steps. Neither Zeno nor the Pythagoreans, however, resolved this paradox. Thus, the tension between Unlimited and Limited continued to play out in the dialectic of Western thought.

One of the important ways in which the dialectic between Infinite and finite played out in philosophic thought is in the attempts to understand the relationship between Being and Becoming. In addition to the problem of explaining how the finite world of becoming arises from the Infinite world of Being, there is the additional problem of understanding how becoming can be related to being. Heraclitus taught that the impermanent flux of becoming implied that all opposites are united in One. Parmenides, like Heraclitus, affirmed the One but emphasized the reality of the One by arguing that change and plurality are impossible to begin with. Thus, the Pythagorean realm of static being is fundamentally incompatible with the impermanence of existing things. Neither Heraclitus nor Parmenides, however, provided an entirely satisfactory philosophical solution to the problem.

A compelling synthesis of Being and Becoming, Limited and Unlimited, One and Many, was provided by Plato in his

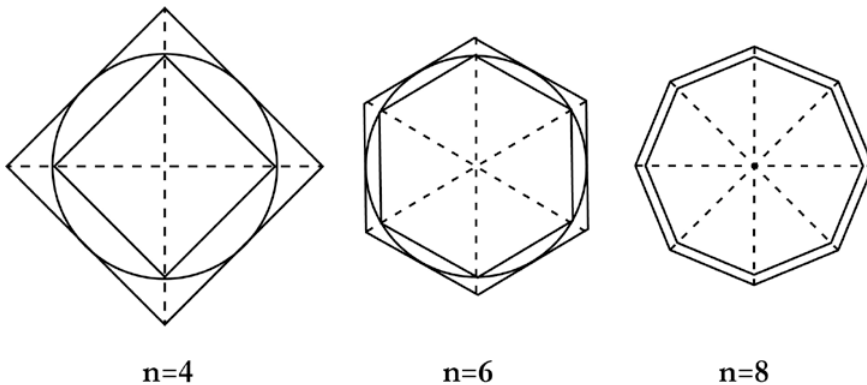
dialogues, most notably in his *Parmenides*. With his theory of Forms and the notion of participation, Plato provided an essentially Pythagorean solution to the problem of how the Limited and Unlimited are related. In a naive understanding of the forms, they are isolated, static patterns set in contrast with the changing phenomena of a sensory world. In a more subtle understanding of Plato's theory of Forms, however, they are recognized as interpenetrating principles that are not other than their own instantiations. The realms of being and becoming do not correspond to separate realms of forms and sensible objects. Instead, being and becoming are both implicit in the nature of both the forms and sensible objects. The Limited and Unlimited, therefore, are coexisting principles that are not fundamentally opposed to one another. A large part of the significance of Plato's contribution can be understood in terms of his synthesis of the Infinite with the finite in a single body of thought that encompasses them both and provides a way to understand their relationship to each other.

Based on the paradoxes of the infinite discovered by Zeno and others, Aristotle rejected the notion that the infinite could be in any way actual, and proposed instead that the Infinite could only be a potential. Aristotle, in other words, rejected the Infinite as an actual existing reality. In Aristotle's view, for example, the whole numbers are potentially infinite because there is no limit to how high one can count. The whole numbers are not actually infinite, however, because no matter how high one counts, one has only counted up to some finite number. One can never actually count to infinity. In addition, Aristotle rejected the actual existence of the continuum. Thus, according to Aristotle, the arrow does reach the target because space is not actually infinitely divided. In



providing this solution to the paradoxes of motion, however, Aristotle implicitly rejects the foundations of geometry, which assumes the existence of the continuum. This problem with Aristotle's account of the infinite, however, did not prevent his ideas from having widespread influence for many centuries.

Using Aristotle's idea of the potential infinite, the Greek mathematician Eudoxus (408-355 BCE) provided the seed for what was to become calculus two thousand years later. Eudoxus's method of exhaustion was extensively used by Archimedes (287-212 BCE) to arrive at arithmetic formulas pertaining to geometric figures. For example, he was able to derive a formula for the area of a circle as follows. Consider a regular polygon with  $n$  sides. Inscribe within the polygon a circle, and inscribe within the circle another polygon with  $n$  sides.



Now notice that both polygons approach the shape of the circle as the number of sides,  $n$ , becomes larger. Thus, for large values of  $n$ , the areas of the two polygons become very close to the area of the circle. Notice also that the area of the circle is always between the area of the smaller polygon and the area of the larger polygon. The area of the circle can thus be found with any desired precision by selecting a sufficiently large value of  $n$  and calculating the areas of the two polygons. This method, however, does not provide a precise value for the area of the circle. To

arrive at a precise formula for the actual area of the circle, one would need to take  $n$  equal to infinity. But this would require one to add up an infinite number of triangles, which is impossible. Moreover, each triangle would have one side equal to zero, resulting in an area of zero. The areas of the triangles would thus add up to zero. Eudoxus's method of exhaustion, therefore, involves contradictions and paradoxes if one applies it to the actual infinite. His method does not allow one to precisely calculate certain continuous magnitudes, or to understand the Infinite in finite terms. It only provides a technique for performing approximate calculations of finite quantities that approximate continuous magnitudes. Although Eudoxus's technique was a practical success, it did not solve the more fundamental problems of infinity. For example, if there is no actual infinity, how are we to

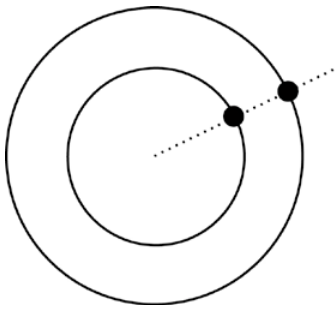
understand the existence of the infinite continuum in geometry?

Plotinus (205 - 270 CE), who drew heavily upon the philosophy of Plato, is the founder of

what is now known as Neoplatonism. In contrast with Aristotle, Plotinus defended the metaphysical reality of the actual Infinite. While agreeing with Aristotle that there is no actual infinite in the sensible realm, Plotinus asserted the reality of the actual Infinite in a transcendent realm known only through mystical insight. Augustine (354-430 CE) was influenced by Plotinus and Plato, and integrated much of Platonism and Neoplatonism with Christianity. The Platonic insight continued to dominate the Christian worldview until



Thomas Aquinas (1224-1274 CE), whose thought was predominantly Aristotelian. Aquinas, however, parted company with Aristotle by asserting his belief in the metaphysical Infinite, i.e., God. Meanwhile, various mathematical arguments were being developed that fostered a more subtle understanding of the infinite as represented in geometrical continuity. John Duns Scotus (1266-1308 CE), for example, argued that it was incorrect to think of a circle as being composed of an infinite number of points. Consider two concentric circles of different size.



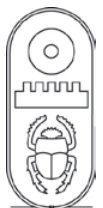
On the one hand, the larger circle must have more points than the smaller circle since it has a longer circumference. On the other hand, because the points along the two circles can be paired up in a one-to-one correspondence, the circles must have the same number of points. Arguments such as these showed that reasoning about the infinite was not always entirely nonsensical. Although the conclusions may be paradoxical, it suggested that perhaps reason could somehow be applied to infinity without being entirely contradictory. The first person to demonstrate this possibility, and to turn the tide of thought toward the mathematical and philosophical Infinite, was Nicholas of Cusa.

### Nicholas of Cusa's Philosophy

Nicholas of Cusa (1401-1464) was a German cardinal, philosopher, and administrator. For many years he served

as papal legate to popes Eugene IV, Nicholas V, and Pius II. In addition to leading an extremely active public life, Nicholas managed to write extensively on a wide variety of juridical, theological, philosophical, and scientific subjects. In his philosophical writings he departed from the prevalent Aristotelian and scholastic doctrines. His first and most famous treatise, *On Learned Ignorance (De docta ignorantia)*, is a mystical discourse on the finite and the infinite. In addition to presenting his important philosophical concepts of learned ignorance and coincidence of opposites, this seminal treatise also contains various bold astronomical and cosmological speculations that depart entirely from traditional doctrines. For example, long before Copernicus, he proposed that Earth is not at the center of the cosmos, and is not at rest. He also argued long before Kepler that the motions of the planets are not circular. These speculations, however, were not based on empirical observations but on metaphysical principles.

Nicholas read widely in various languages and was influenced by Plato and Neoplatonic thinkers such as Plotinus and Proclus. Nicholas also drew inspiration from Dionysius and Meister Eckhart. From Anselm he took the notion of God as ultimate Maximum. From Ramon Lull he took the idea that the infinite is the joining of beginning, middle, and end. The fundamental insight that inspires Nicholas's thought, however, comes not from his wide learning, but from a mystical illumination in 1437 during a journey home from Constantinople. This gift from God, as he describes the vision, provided him with the key that allowed him to talk about the ineffable, and provided a way of viewing opposites as coincident from the point of view of infinity. According to Nicholas, this logic of infinitude unites opposites, transcends comparison, overcomes limits

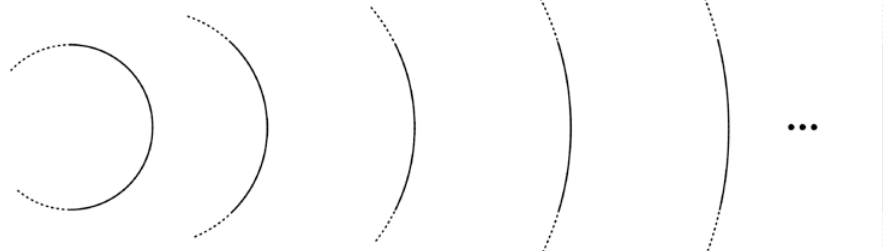


of discursive reasoning, and goes beyond both positive and negative theology. The profound mystical insight at the heart of Cusa's logic of infinitude is clearly expressed in the following passage: "In God we must not conceive of distinction and indistinction, for example, as two contradictories, but we must conceive of them as antecedently existing in their own most simple beginning, where distinction is not other than indistinction."<sup>22</sup>

An expression of this insight is Cusa's idea of coincidence of opposites. Cusa recognized that this idea is an expression of the principle of Incarnation, wherein God's identification with creation in Jesus coincides with God's transcendence above all creation. In God the opposites of identity and difference coincide. Thus Nicholas does not present a merely negative theology, but a conception in which the ineffability of the Infinite coincides with its expressibility, in which creation coincides with creator, and transcendent coincides with immanent. As Nicholas writes, "The great Dionysius says that our understanding of God draws near to nothing rather than to something. But sacred ignorance teaches me that that which seems to the intellect to be nothing is the incomprehensible Maximum."<sup>23</sup>

Like Plato, he has a synthetic philosophy that comprehends and integrates opposing streams of thought. Also, Nicholas never attempts to present a consistent and self-contained system of thought. Instead, he remains open to unlimited elaborations of his seminal ideas of learned ignorance and the coincidence of opposites.

Learned ignorance itself is a coincidence of opposites, for it teaches that the more we know



our ignorance, the more we attain to true knowledge. Thus, as learned ignorance is perfected, knowledge and ignorance coincide. Using a comparison of the Infinite with the finite, Nicholas explains learned ignorance as follows: "All those who make an investigation judge the uncertain proportionally, by means of a comparison with what is taken to be certain. Therefore, every inquiry is comparative and uses the means of comparative relation. ... Hence, the infinite, qua infinite, is unknown; for it escapes all comparative relation."<sup>24</sup>

"It is self-evident that there is no comparative relation of the infinite to the finite. ... Therefore, it is not the case that by means of likeness a finite intellect can precisely attain the truth about things. ... For truth is not something more or something less but is something indivisible. Whatever is not truth cannot measure truth precisely. ... For the intellect is to truth as an inscribed polygon is to the inscribing circle."<sup>25</sup>

Here Nicholas introduces a mathematical analogy to explain his metaphysical ideas. Just as the definite polygon cannot measure the continuous circle, our finite minds cannot know the Infinite. All we can know of the Infinite is that we cannot know the Infinite. To the extent that we can understand the Infinite at all, Nicholas argued, we must understand it through the coincidence of opposites. For example, Nicholas taught that, in the Infinite, the circle coincides with the line. He illustrated this paradoxical statement by considering a sequence of circles of larger and larger diameters.

As the circles increase in size, a given length of the circumference is less curved and more similar to a straight line. The infinite circle, therefore, coincides with the line. The actualization of this coincidence of opposites, however, cannot be comprehended by the rational mind. It can only be seen through mystical insight that cannot be consistently expressed in rational terms. Nicholas thus embraces in his thought the opposites of finite and Infinite, arguing for the limits of our rational understanding, while also pointing to an insight that transcends these limits.

Nicholas believed that his doctrine of the coincidence of opposites had implications not just for theology and philosophy, but also for mathematics, physics, and other branches of learning. Boldly contradicting the cosmology of his day, Cusa argued that the cosmos is not bounded by a celestial sphere and does not have Earth, or the sun, at its center:

“It is impossible for the world machine to have this sensible earth, air, fire, or anything else for a fixed and immovable center. For in motion there is simply no minimum, such as a fixed center... And although the world is not Infinite, it cannot be conceived of as finite, since it lacks boundaries within which it is enclosed... Therefore, just as the earth is not the center of the world, so the sphere of fixed stars is not its circumference.”<sup>6</sup>

Because the cosmos is infinitely large, it has no unique center at all, since it can be equally viewed as centered around any point. Nicholas thus introduced the notion of spatial perspective into cosmological thinking:

“Since it always appears to every observer, whether on the earth, the sun, or another star, that one is, as if, at an immovable center of things and that all else is being moved, one will always select different poles in relation to oneself,

whether one is on the sun, the earth, the moon, Mars, and so forth. Therefore, the world machine will have, one might say, its center everywhere and its circumference nowhere, for its circumference and center is God, who is everywhere and nowhere.”<sup>7</sup>

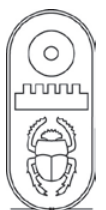
Cusa goes even further to argue that Earth is actually in motion: “The earth, which cannot be the center, cannot lack all motion. In fact, it is even necessary that it be moved in such a way that it could be moved infinitely less.”<sup>8</sup>

Anticipating Kepler, Cusa says that the motions of the planets and stars are not circular, and not uniform: “Even if it might seem otherwise to us, neither the sun nor the earth nor any sphere can describe a perfect circle by its motion... nor is a sphere’s or a star’s motion at one moment ever precisely equal to their motion at another.”<sup>9</sup>

His cosmological speculations, therefore, did not merely anticipate the Copernican revolution; they went far beyond it. The universe of Cusa was not a heliocentric cosmos with finite size, but a centerless cosmos whose size is infinite.

### **A History of the Infinite after 1500**

Nicholas of Cusa had proposed ideas that appear to anticipate both Copernicus and Kepler. Like Copernicus, he proposed that Earth was not at the center of the cosmos and was in motion. Like Kepler, he proposed that the motions of the planets are not uniform or circular. Nicholas, however, did not base his arguments on empirical data, nor did he develop his ideas into mathematical models that could be tested against experience. Nicholas did not, like Copernicus, show that his ideas could account for astronomical observations with a respectable (although not perfect) amount of accuracy. Nor did Nicholas come even remotely close to Kepler’s discovery that the planets precisely follow elliptical orbits and sweep



out equal areas in equal times. Although Nicholas does not deserve credit for these amazing discoveries themselves, his thought dramatically expanded the intellectual horizon of his time, and opened up possibilities of thought that allowed Copernicus and Kepler to make their breakthroughs.

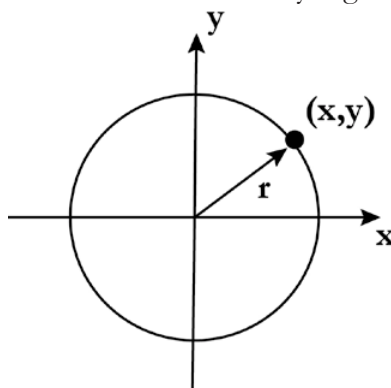
Nicholas of Cusa's thought also opened up possibilities in mathematics that paved the way for calculus and a mathematics of the continuum. Ever since the Pythagoreans discovered that certain geometrical magnitudes could not be expressed in terms of arithmetic ratios, mathematics had been divided into two incommensurate branches: arithmetic and geometry. This division expressed a fundamental dichotomy between the infinite (the geometrical continuum) and the finite (the arithmetic of whole numbers). The Arabs, however, did not let a lack of rigorous theoretical foundations prevent them from freely assuming the existence of irrational numbers and using them in calculations. The use of irrationals was first introduced into Europe around 1200 by Leonardo of Pisa (Fibonacci). Although by Cusa's time they were in widespread use across Europe, it was not clear in what sense they were actually numbers since they could not all be expressed in any definite way, such as by a finite decimal expansion. As Michael Stifel wrote in 1544: "That cannot be called a true number which is of such a nature that it lacks precision...Therefore, just as an infinite number is not a number, so an irrational number is not a true number, but lies hidden in a kind of cloud of infinity."<sup>10</sup>

Indeed, as it would be eventually discovered, the basis for irrational numbers requires a mathematics of the infinite. Thus, as long as infinity was considered absolutely unthinkable, no such mathematics could be found. Through the use of his logic of infinity, and his revival

of the actuality of the infinite, Nicholas of Cusa opened the door for these important developments in mathematics.

An essential step in the development of modern science was the integration of arithmetic and geometry by René Descartes (1596-1650) and Pierre de Fermat (1601-1665). Analytic geometry, as it was called, allowed geometrical objects to be transformed into algebraic equations, and vice versa. This correspondence is made possible by superimposing upon a geometric plane a Cartesian coordinate system that associates to each point P in the plane a unique pair of numbers (x,y). For example, a circle, which is defined geometrically as the set of points equidistant from a central point, can be represented algebraically as the set of coordinates satisfying the equation  $x^2+y^2=r^2$ , where r is the radius of the circle.

At the foundation of analytic geometry,

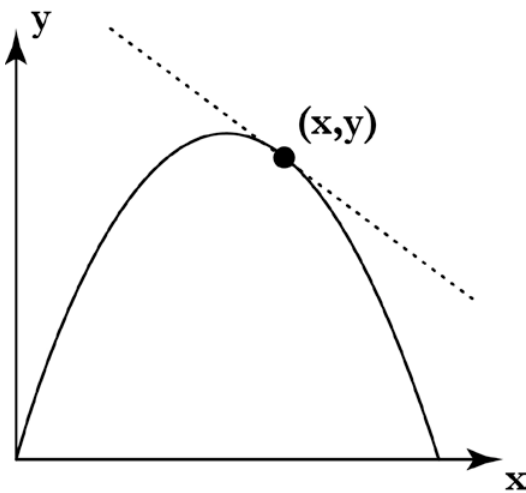


GEOMETRY	ALGEBRA
all points in a plane	all coordinates (x,y)
a unique point P <sub>1</sub>	a unique pair of coordinates (x <sub>1</sub> ,y <sub>1</sub> )
a circle with radius r and center P <sub>1</sub>	(x,y) such that $(x-x_1)^2+(y-y_1)^2=r^2$
a line passing through points P <sub>1</sub> and P <sub>2</sub>	(x,y) such that $(y-y_2)=(x-x_2)(y_1-y_2)/(x_1-x_2)$
the intersection of the above line with the above circle	(x,y) such that both $(x-x_1)^2+(y-y_1)^2=r^2$ and $(y-y_2)=(x-x_2)(y_1-y_2)/(x_1-x_2)$

however, was the implicit assumption that there actually is a number associated with each point in the continuum of geometric space. As the Pythagoreans had shown, however, there are no such numbers associated with certain geometrical magnitudes. Any attempt to express the coordinates of certain points in numerical form, such as a decimal expansion, results in an infinite sequence. Nevertheless, analytic geometry continued to be used in spite of these unresolved issues at its foundation. They would not be resolved until several hundred years later when a rigorous mathematical foundation for the real numbers was finally provided.

Calculus was a profound mathematical breakthrough with paradoxes of the infinite at its heart. The development of the calculus was motivated in large part by the following problem: given an arbitrary point on a curve, what is the tangent line to the curve at that point? Using analytic geometry, this problem could be translated into an equivalent algebraic problem: given an arbitrary value of one quantity (e.g., time), what is the rate of change (e.g., velocity) of the other quantity (e.g., position)?

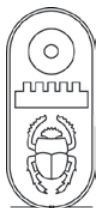
Systematic methods for solving this



problem were independently developed by Sir Isaac Newton (1642-1727) and G. W. Leibniz (1646-1716), creating what

is now called the calculus. By generalizing Eudoxus's technique to arbitrary curves and using analytic geometry to apply the principles to algebraic equations, Leibniz and Newton provided powerful techniques for solving many mathematical problems that previously had been impossible to solve. The calculus allowed Newton, for example, to formulate his laws of classical physics and his law of universal gravitation, which profoundly influenced the course of Western history. Here is perhaps the most powerful example of how metaphysical thought about the Infinite has had dramatic consequences in the world.

Despite its remarkable practical success, however, at the heart of the calculus were paradoxes and contradictions. In addition to the fact that it takes for granted the existence of irrational numbers that cannot all be represented in any finite way, the calculus also involved nonsensical mathematical manipulations involving infinite sums of infinitesimal quantities. These strange infinitesimals are at once smaller than any positive number, while also not being equal to zero. To make matters worse, the calculus also involved calculating infinite sums of infinitesimals, which mysteriously resulted in finite numbers. Since the calculus worked, it obviously had some truth to it. Yet, it also involved mysterious and incoherent manipulations of infinitesimal quantities, as well as infinite sums. Somehow, Newton and Leibniz had discovered a subtle "logic of infinitude" that allowed them to perform mathematical marvels, without really being able to provide any rigorous account or rational foundation for their methods. Their techniques involved inconsistencies because Newton and Leibniz, following in Cusa's footsteps, granted actual existence to the infinitely large and infinitely small, and by admitting that an infinite progression can result in an



actual limit.

It was not until the nineteenth century that a rigorous foundation for calculus was provided by Augustin Cauchy (1789-1857) and Karl Weierstrass (1815-1897). The essence of their solution to the problem was to dispense with infinitesimals and the infinite altogether, and instead think in terms of relationships between small, but finite, quantities that potentially can be made arbitrarily small. This approach was formalized in the mathematical conception of limit. For example, the sequence of polygons with increasing numbers of sides has the circle as its limit because one can produce a polygon that is arbitrarily close to the circle by selecting the number of sides to be sufficiently large. Thus, although the polygons never actually become the circle, a polygon can be found that is as close as one wants to the circle. Since there is no appeal to infinitesimals or the infinite, this reasoning provides a rigorous foundation for the methods of the calculus. This rigorous foundation for calculus, thus represented a turn back toward the conception of the potential infinite, and an elimination of the actual infinite from calculus.

Yet, a fundamental problem at the basis of both analytic geometry and calculus remained unsolved: how can we justify using irrational numbers that cannot all be expressed in finite terms? The solution to this problem was provided by Richard Dedekind (1831-1916) who essentially was forced to formally introduce the infinity of the continuum into mathematics. Because there are points in the geometrical continuum, such as the square root of two, that do not correspond to any rational number, Dedekind devised a technique for filling the “gaps” between rational numbers with the irrational numbers. Dedekind’s definition, however, required the use of infinite sets of rational numbers. Thus, the actual infinite ultimately had

to be explicitly affirmed in mathematics in order to provide a foundation for the numbers used in both analytic geometry and calculus.

Georg Cantor (1845-1918) was also instrumental in revitalizing the actual infinite in mathematics. He was the first to provide a rigorous mathematics of transfinite numbers, as well as the first systematic mathematical theory of sets. One of Cantor’s fundamental contributions is a method for comparing the size of infinite sets. According to Cantor’s definition, a first set is equal in size to a second if there is a one-to-one correspondence between their members. For example, the set of even integers is equal in size to the set of odd integers. Less obvious, however, is the fact that the set of even integers is equal in size to the set of all integers: each integer is paired with its double. Even more remarkable was a proof by Cantor that the set of integers is the same size as the set of all rational numbers. Cantor also proved that the set of points in a finite line segment is the same size as the set of points in an infinitely long line. Moreover, the set of points in the finite line segment is also the same size as the set of points in all of three-dimensional space! With the continuum, therefore, an infinite space is completely contained in a finite line segment. One might begin to suspect from these discoveries that all infinite sets are the same size. Surprisingly, however, Cantor proved that the set of points in the continuum of a line is a larger infinity than the infinity of the integers. Thus, there are different degrees of mathematical infinity.

Cantor’s mathematics of the infinite, however, had its own paradoxes. At the basis of Cantor’s theory, and all of modern mathematics, is the intuition of set, which Cantor defined as follows: a set is a many which allows itself to be thought of as a one. Bertrand Russell (1872-1970)

soon discovered, however, that even the simple idea of set has inherent paradoxes. Russell viewed these paradoxes as a problem to be eliminated by enforcing a strict linear hierarchy of sets. Cantor, on the other hand, viewed these paradoxes as Cusa might have seen them: Whereas some collections of many things can be consistently thought of as a one, others are so infinitely large that they cannot be consistently thought of as a one. Cantor called these collections inconsistent collections, and regarded them as absolutely infinite. Here we are reminded of Cusa's teaching that the infinite involves coincident contradictories. It is at this point that the consistent mathematics of the infinite ends and the contradictory metaphysics of the absolute infinite begins. As Cantor said, "The Absolute can only be acknowledged and admitted, never known, not even approximately."<sup>11</sup>

The history of the Infinite thus reveals in both mathematics and philosophy a development of increasingly subtle thought in the form of a dialectical dance around the ineffable and incomprehensible Infinite. First we step toward it, reaching with our intuition beyond the limits of rationality and thought into the realm of the paradoxical. Then we step back, struggling to express our insight within the limited scope of reason. But the Absolute Infinite remains at the border of comprehensibility, inviting us with its paradoxes to once again step forward and transcend the apparent division between finite and Infinite. As Nicholas of Cusa closes his treatise on learned ignorance, "These profound matters should be the subject of all the effort of our human intelligence, so that it may raise itself to that simplicity where contradictories coincide."<sup>12</sup>

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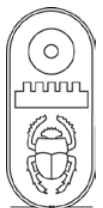
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## End Notes

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  3. Hopkins (1985), p. 70.
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  6. Nicholas of Cusa (1997), p. 158-159.
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Rosicrucian Park  
1342 Naglee Avenue • San Jose CA 95126  
USA

