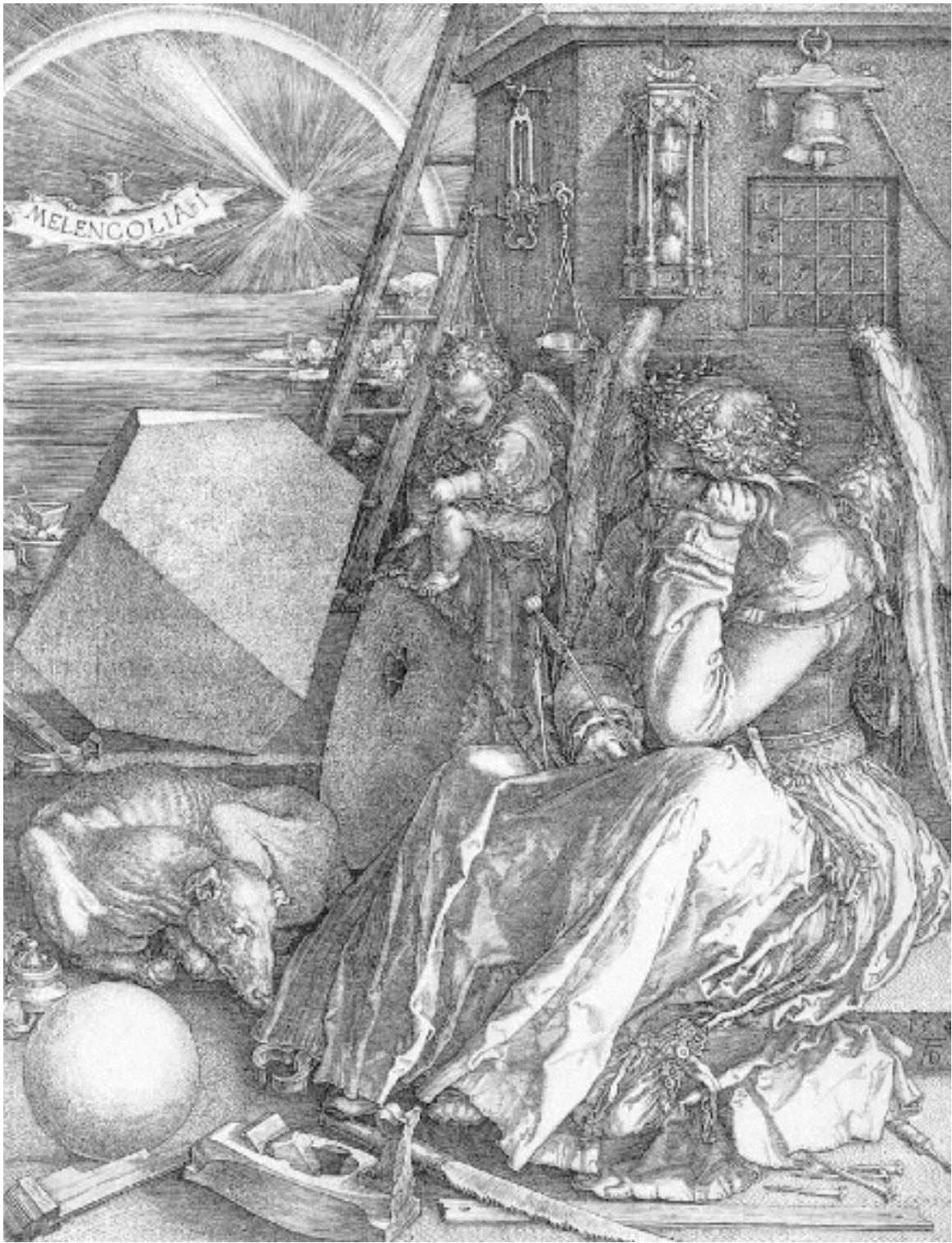


MELENCOLIA I¹

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On the surface any fool can plainly see a powerful angel staring intently at an oddly-shaped polyhedron; a lizard-tailed bat-headed creature flying a banderole with the motto "MELENCOLIA I" under a moonbow in the night sky over a dark sea; a dazzling comet; a winged baby, or putto, writing on a block, perched on the edge of an up-turned stone wheel; a clutter of devices of many trades and sciences including a magic square; and an open-eyed dog curled up between the polyhedron and a globe.

This is the most celebrated engraving of Dürer if not of the history of art, and it deeply influenced European artists for several centuries. It is also a conundrum that hundreds have solved in wildly different ways. Erwin Panofsky, an eminent art historian, and Frances Yates, a scholar who studied the Elizabethan age, showed that *Melencolia I* incorporates Renaissance Hermetic, Neo-Platonic, and magical traditions that are indispensable for its interpretation. They saw mainly aspects of the work that touched on their own interests. The art historian saw the work as an expression of the artist's frustration. The scholar of the Hermetic tradition read it as a harmony between microcosm and macrocosm. Since I was a boy it seemed to me that the work expressed a feeling about knowledge, but also challenged one to read the feeling. Was the angel melancholy from knowing too little? Too much? About what? Panofsky and Yates did not address this question.

But Albrecht Dürer (1471-1528) used many concealments both to preserve and cloak his meanings. I only noticed these recently, and when decoded they seem to answer my questions at last. They show that Dürer had dangerous ideas, the courage to express them, the art to do so for the ages, and the wit to do so subtly, by encoding them in ghosts, anagrams, a rebus, gematria, puns, and a magic sign, all hidden out in the open. They tell how one of the most creative people of the early Renaissance thought about the cosmos, science, art, psyche, and himself, and something about our own origins.

The first written description of *Melencolia I*, which also seems to be the first published art criticism in history, described the magic square full of numbers as a spiderweb full of dead flies, omits the magical Neo-Platonic elements that the main students of the work have seen in it, and ignores the hidden elements and ideas that I will point out. It set the standard of accuracy for subsequent analyses. The author, Joachim Camerarius, was a friend of Dürer and even watched Dürer at work, and probably knew everything that we discover here. But he wrote in a time of intensifying witch-hunts, and he and his contemporaries presumably tempered their comment on the work with tact that was sensible for the times. Anyone who knew how to read Dürer had good reason not to make this knowledge public. This may have permitted the covert content of *Melencolia I* to be forgotten, so that it turned into a kind of time-capsule. We now respectfully open it and point out what Dürer presumably wanted seen, starting with personal items and proceeding to the cosmic.

Some take the banderole at face value, implying that Dürer did not know how to spell. Some infer that the angel is melancholy, implying that Dürer did not know how to draw a sad face. Some describe the polyhedron as a truncated cube, implying that Dürer did not know how to draw a cube in perspective. We may miss Dürer's meaning if we ignore his amazing graphic understanding and precision. There is every indication that Dürer had enormous control of his burin. I will assume that he expressed exactly what he meant to, including leaving some elements of the engraving slightly ambiguous.

0.1 The Solid

What triggered my brief obsession with *Melencolia I* was a pair of faces I found hiding in its polyhedron. The polyhedron was only recently convincingly analyzed by Peter Schreiber, and is now called the Dürer Solid. It is central to the interpretation, and I describe it first but interpret it last.

How to make a Dürer Solid: Connect twelve equal stiff rods with flexible joints to outline a cube. The angles formed by the rods with one another in the cube are all right angles, quarters of full circles. Grasp two diagonally opposite corners and pull until the angles at those corners shrink from a fourth to a fifth of a full circle. The cube is now a rhomboid with two sharper corners and six blunter ones. Its faces are congruent to rhombuses that Roger Penrose later used to tile the plane. Inscribe its six blunter corners in a unique sphere. Trim the two sharper corners where they stick out of that sphere. Reconnect the three cut rods at each end with a triangle. You have made the Dürer Solid in outline. All vertices of the final Solid lie on one circumscribed sphere, as was held to be a condition of beauty by Dürer. The difference between the longest and shortest edges of the Dürer Solid is in the Divine Proportion to the shortest. This does not explain why Dürer featured this construction. I understood this only after breaking the other codes.

0.2 The ghost

Now we look into the Dürer Solid. If we step back say four paces from the print, or squint, and shift our attention from the stark contrasts of the engraving to the subtle variations of its shading for a minute or so, our innate face-detecting capability soon finds a face in the polyhedron. Ultimately we see two faces in turn, an old man and an old woman, drawn at different angles and scales. Dürer put subliminal faces into several of his works. For example his watercolor View of Arco has a large, well-known, and especially funny one. They make the picture polymorphic: What we see depends on how we look. They do not jump out at us but wait patiently until we call them forward. The faces in *Melencolia I* are the largest and the only trimorphic ones I have found in Dürer's work, and we find no mention of them, though they are meaningful for the interpretation of the piece. But they have been seen before. When the engraver Jan Wierix (ca. 1553-1619) engraved a copy of *Melencolia I*, to visibly distinguish copy from original he left out an ornament that Dürer drew between the word Melencolia and the letter I. But in addition Wierix changed both hidden faces to hidden grotesques, so he must have seen them.

The two different degrees of profile of these two faces match those of Dürer's last portraits of his mother and father. His father died in 1507 at the age of 75, and Dürer's last portrait of him shows him beardless at the age of 70, while the man in the Solid has beard and moustache; but five years is long enough to grow the small beard on the hidden man's face. Dürer did his last portrait of his mother two months before her death and *Melencolia I* soon after. There is not enough detail in the faces for positive identification, but since the poses match and the picture has already been recognized as autobiographical, we proceed under the assumption that they represent his mother and father at their death. They appear slowly the first time but are inescapable thereafter. Some see the father first and some the mother, but no one can see both at once.

Here are some clues to make sure we find the same faces. Both face our left, like the angel and the putto. The mother nearly matches the angel in pose and scale and covers her hair as in Dürer's 1514 portrait of his mother. Her eye nearest to us is in a shaded patch about as far from the left edge of the painting as the angel's left eye is from the right edge, and a trifle lower in the picture. The father is in half profile, head tilted to our right, perhaps half again as large as the mother's.

His left eye and hers fall in the same patch of shade.

To go further we need to know some of Dürer's life. Dürer was not only a celebrated artist but also a prominent mathematician and art philosopher. He studied in Italy for two extended periods in the times of Leonardo da Vinci and brought the Italian theory of perspective back with him to northern Germany. He formulated theories of beauty and proportion, that were more relativistic than Leonardo's. His studies of perspective and human proportion under Jecopa dei Barbari in Venice developed a passion for mathematics in him and led him to found the mathematical field of descriptive geometry. He wrote the first book printed in German on pure mathematics. He published the first mathematical proof in German. In the course of describing the artistic process and its objects in German instead of Latin, he transformed German writing and formed the German scientific language as Leonardo had formed the Italian. He invented etching, and a mechanical aid for perspective drawing. He did the first known self-portrait, and the first painting of a specific landscape. He seems also to have been the first artist in Germany to conceive of his special talent as a divine gift and charge for it, instead of just billing for time and materials like Raphael or any housepainter.

He was influenced by the Occult Philosophy of Ficino and Heinrich Cornelius Agrippa von Nettesheim (1486-1535), key figures in the Florentine Neo-Platonist school. Agrippa brought the manuscript of *De Occulta Philosophia*, a compendium of magic and astrology still in print, to Nuremberg in 1510. Astrologists had long associated Saturn, the darkest planet, with the black bile or melancholia, the least favorable humor, and with Earth, the lowest element; and therefore with earthworkers, the lowest class of people, and geometers, earth-measurers. Agrippa instead gave both positive and negative potentialities to all the humors and planets depending on astrological conditions, and gave black Saturn the highest potentiality as well as the most dangerous. He radically redefined Saturnian melancholy as divinely inspired creative furor, in accord with remarks of Aristotle.

Much of *Melencolia I* is probably astrological. The elements of Earth and Water, all things dark and cold, the humor of the black bile, which is melancholia, the bat-lizard, and Father Time, the bearded old man with a sickle, the god Kronos-Chronos, reduced here to the hour-glass, are all associated with Saturn, who is inspiring melancholia in the Agrippan sense of creative artistic furor. The dark faces, the rare omens in the sky, the artisan tools cluttering the work-yard, the stones that the grim putto and the saturnine angel sit on, the dysfunctional millstone, are signs of Saturn. The magic square, the dog, and the bell, however, are signs of Jupiter, prescribed by Agrippa to moderate the Saturnian furor.

Agrippa divided the world under God into three astrologically coupled concentric realms, roughly mundane, celestial, and spiritual, accessible to three respective human faculties of *imaginatio*, ratio and *mens*, poorly translated as imagination, reason, mentation. *Imaginatio* is how artists, artisans, and geometers perceive things made of the four elements of Earth, Water, Air, and Fire and located in space and time, and prophesy natural disasters when sufficiently inspired by Saturn. Ratio is how statesmen, physicians, and scientists work in the moral, political, and starry realm and prophesy the rise and fall of empires, novas, and comets under extreme Saturnian stimulus. *Mens* is the faculty that enables theologian and philosophers to perceive angels and Platonic Ideas and with Saturn's inspiration to prophesy the rise and fall of religions. Following Plato, Neo-Platonists took the sphere of *mens* to be the realest of the three and closest to God.

There is little Agrippan influence in Dürer's other work, and only two years later Dürer became a follower of Martin Luther, who linked the Occult Philosophy with witchcraft. *Melencolia I* provides a briefly open window into Dürer's thought, which looks far beyond Agrippa and well into the next century.

Now let us return to the work at hand. Dürer's Solid is a mathematical Idea and therefore belongs to the spiritual realm of *mens*. When Dürer consigns his parental ghosts to it he thus sends them to his concept of Heaven. There he can see them only through his own *mens*, which is therefore the angel. If the stone Solid is *mens* then judging by the vertical positioning, the stone ball is the unstable mundane realm of *imaginatio*, and the stone wheel is the celestial domain of *ratio*. But Dürer's *mens* is no longer Agrippa's. It is mathematical.

0.3 The rebus

The angel sits on a stone slab and on the edge of the slab is a monogram formed from the initials AD and the date 1514. Dürer's monogram seems at least slightly irreverent: It puns on Anno Domini as if equating Dürer and Domini – more explicit self-glorification will come – and it buries his family initial inside his personal one. But there are alternative readings. According to one, the monogram represents a major event in the family history that occurred before Dürer's birth. According to another, the capital A is also a rebus for the family name.

In 1455 the goldsmith Albrecht moved from Ajtas, Hungary to Nuremberg, Germany. Ajto in Hungarian means door, or Thr in the German spelling of the time, so Albrecht of Ajtas became Albrecht Threr, soon simplified to Dürer, which sounds the same in one dialect. Had he moved to England he would have become Albert Gates, I suppose.

In Nuremberg he had a son, also Albrecht Dürer, who became the famous engraver of *Melencolia I*. The family coat of arms includes a gate with two open doors, and this is presumably a rebus for the family name. There are also conventional symbols that can be found in any dictionary of heraldry. A closed helmet in full profile means the rank of esquire, wings mean fame, and the blackamoor on top means heroic action in the Crusades. And then there is a cryptic addition that is important for the interpretation of *Melencolia I*: the gate stands on a cloud, usually not mentioned. We see the cloud as a rebus for a great personal accomplishment.

Coats of arms usually show off the pride of the family. To proclaim not only his name and rank but also what he was most famous for, Dürer could simply have added a burin or graver, the engraver's tool, to his coat of arms. But the burin is also an artisan's tool, and Dürer made it his mission to elevate the artist above the artisan. Albrecht naturally had a modicum of Latin, the language of scholarly discourse in Europe and England, and he would have known the Latin for his burin, which is *caelum*. This also happens to mean the sky, heaven, and the heavens. Dürer put the gates in the sky, *caelo*, as a rebus for "I engrave" (*caelo*). We will meet his sense of humor again.

It is not far from a gate *in* heaven to a gate *of* heaven, from *porta caelo* to *porta caeli*. The Dürer gates in the coat of arms could pass for the pearly gates. In Genesis 28:12, the gate of heaven is the ladder Jacob saw in a dream at Bethel, and it soon became a standard metaphor for the church or for Mary. An educated person of the time seeing this crest would be entitled to read it as a claim to divine status; a self-glorification. This would not bear the onus then that it might today. It could be read as a recognition that we are created in the image of the deity. He dated one version of this heavenly coat of arms as late as 1523, four years after his Lutheran conversion.

With Dürer's coat of arms in mind, we can see the A in his monogram as a gate as well as a letter. The legs and lintel of the gate make up the uprights of the A and the cross-bar of the A is a stiffening cross-beam just beneath the lintel. Then besides naming Albrecht as the artist, the A is a rebus for the Dürer family and perhaps the town of Ajtas. The monogram is polymorphic. This A is the first of several gates just below the surface of the picture that are important for its

interpretation.

0.4 The gematria

Set into the wall beyond the angel is a gnomon magic square, meaning that not only do every row, every column, and both diagonals add to the same sum, but so do all four quadrants. The idea probably came to Dürer from Agrippa, who was in Germany in 1510 with a first draft of his *De Occulta Philosophia*. Agrippa gave astrological significance to a magic square for each of the seven "planets," ranging from a 3-by-3 Saturn's Table to a 9-by-9 Moon's Table. Jupiter's Table was the gnomon magic square

4	14	15	1
9	7	6	12
5	11	10	8
16	2	3	13

Agrippa warned that the undiluted influence of Saturn could lead to the insanity of acute melancholia and argued that Jupiter's Table called down Jupiter's protection against this Saturnian madness. He did this using gematria, a practice based on reading words in the Hebrew alphabet as numbers and conversely. Agrippa applied Hebrew gematria to the numbers in Jupiter's Table to argue for its protective virtue. A Latin form of gematria assigned the Latin letters numerical values A=1, B=2, C=3, and so on. Dürer used it in *Melencolia I*. A Christian cabalism was practiced in Europe at least since the Majorcan philosopher Ramon Llull (1232-1316), and it increased in Italy and elsewhere when Spain expelled its Jews in 1492. The Christian cabala, including the Great Art of Llull, influenced the Florentine Neo-Platonist school and fit well into its doctrine of cosmic harmony. The magic square in *Melencolia I* is

16	3	2	13
5	10	11	8
9	6	7	12
4	15	14	1

Panofsky and Yates say that this is Jupiter's Table but it is not; by elementary transformations Dürer changed the bottom line of Jupiter's Table to 4 15 14 1. This is Latin gematria for the Dürer signature and date that appears at the bottom of the engraving, linearly ordered as D 1514 A. The occurrence of the date 1514 in Dürer's Table is therefore not a coincidence but a contrivance. Let us call it his Dürer's Table. He may have adjusted the date and overridden Agrippa's gematria to create this harmony. This suggests that Dürer took from Agrippa just what he pleased, and it alerts us to look for other gematria.

We need not look far. The sum of the whole table is 136. The Latin gematria for "Albrecht Dürer" is 135, ignoring the non-Latin umlaut. There is a significant discrepancy of 1 between his 135 and Jupiter's 136. One must separate the 1 from the table to make it come out. Examination of Dürer's Table shows that a wing of the angel is brushing the 1, and only the 1, and that the 1 is considerably bigger than all the other numerals, as in our copy of Dürer's Table above. The enlarged "1," also hitherto unnoticed, breaks the sum into $136=1+135$ and puts Dürer himself into the divine table.

The magic square and the bell hanging over it presumably represent arithmetic and music, two of the quadrivia. Music was included in the divine quadrivium with arithmetic, geometry, and astrology on the grounds that it was mathematical. Agrippa prescribed soothing music as well as Jupiter's Table to ward off the acute melancholy that Saturn could cause in the young artist.

0.5 The anagram

The bat-lizard opposite the magic square carries the most conspicuous textual element, a banderole with the motto MELENCOLIA I. The strange spelling suggests the constraints of an anagram. Anagrams were more important and common in the 16th century than today. Thinkers of the time who solved an important problem — for example, a mathematician who discovered how to solve some equation — could not stake their claim for posterity by publishing the result, for the system of scientific archives did not yet exist. Some concealed their solutions in anagrams that they published with the problem. For example, Roger Bacon concealed the formula for gunpowder in an anagram to prevent the proliferation of this weapon. Only those who already knew what the anagram said could read it and see that its author had known it first. The anagram was often published as a meaningless jumble of letters, announcing the fact that it was a cipher. In the highest kind of anagram the rearrangement is again meaningful, providing a second veil that conceals even the presence of a cipher, and adding a cover message. *Melencolia I* seems to be the cover message of an anagram that has worked well. Melancholia is Greek for the black bile and is compounded of melas, black, and choli, bile. In Latin it is Melancholia, in German Melancholie. In none of these languages is it Melencolia. Assuming that a man as concerned with precise expression and language as Dürer would spell Melancholia as Melencolia out of ignorance or carelessness is rather like supposing that Dürer did not know how to draw a cube in perspective. We will suppose that he wrote what he meant, and that he knew that his variant spelling might challenge the viewer with an anagram, which presumably many have solved already. The motto should name the central subject of the engraving, as do banderoles in other works of Dürer.

Panofsky found that Dürer meant this work to show all aspects of himself. Indeed, we can see the angel as Dürer's divine *mens*, and the putto as his mundane *imaginatio*. Some, influenced by the banderole, say that the main theme of the picture is sadness over the fact that the creative artist cannot compete with the divine Creator, and that the starving dog represents the starving artist. One weakness in this theory of sadness and starvation is that Dürer was immensely famous throughout Europe. He was greeted with a public celebration when he visited Amsterdam, met with the famous and wealthy wherever he went, and had a royal allowance. Another is that the angel is not sad; we return to this below.

According to Yates, on the contrary, the engraving represents not failure but triumph of the Saturn-inspired artist, and the winged putto is not the generic starving artist scribbling on a slate but the famous Dürer himself, engraving *Melencolia I*. Dürer's earlier less metaphoric self-portraits do not show the artist at work. The melancholia that the motto suggests is not mere sadness but furor melancholicus, as Agrippa termed the creative frenzy. For her the central message of the engraving is the hermetic doctrine of creative harmony between microcosm and macrocosm, not the artistic problems of Dürer. This does not explain the anagram, the polyhedron, and the ladder, or solve the main puzzle. Our new-found data permit us to explain these.

The appended I in the motto has puzzled many. Some have suggested that it refers to the medieval tripartition of the universe and implies engravings of *Melencolia II* and *III*, perhaps lost. *Melencolia I* is indeed one of three engravings called the Masterpieces of Dürer that make a plausible triptych of the three Agrippan worlds of *imaginatio*, *ratio*, and *mens*. They could be hung with *Melencolia I* on the right, *The Knight, Death, and the Devil* in the center, and *St. Jerome in His Study* on the left. The Knight is believed to represent the Christian Soldier of Erasmus. Jerome on the left, as the founding father with the most awareness of Hebrew scriptures and lore, was the patron saint of Renaissance Neo-Platonists. Moving from *Melencolia I* on the right to Jerome on the left would be a transition from infancy to old age, from sea-level to the peaks visible far up the road of the

Knight, and from mundane disorder to holy order. Do not affix the pictures permanently. Later we will have to reverse their order.

Each of the three Masterpieces includes an elevated hour-glass and a dog in the foreground. Presumably the hour-glass is the mark of Father Time and Saturn, Chronos and Kronos, inspiring the hero of each engraving. The dog too requires interpretation. Melencolia's dog waits under a bat-lizard, the Knight's dog runs above a lizard, Jerome's dog sleeps next to a lion. Agrippa is explicit about his animals. Bats and lizards are from Saturn, dogs are from Jupiter, lions are Solar, bats and lizards are melancholic, lions and dogs combat melancholia. The bat above the dog represents the dominant influence of Saturn moderated by Jupiter. The knight's dog is above his lizard because his Jupiter dominates his Saturn. Jerome's dog sleeps, we suppose, because his Saturn, the hour-glass, is controlled by his traditional friendly lion.

The triptych theory does not explain or solve the anagram, however, or explain why one picture was captioned and not the other two. For a mathematician like Dürer, we expect an x' , x prima, to signal an earlier x , not a later x'' or x''' . *Melencolia I*, or Melencolia prima, requires us to find Melencolia, not *Melencolia II* and III. We do this next.

To unscramble this anagram I reasoned as follows. With so many Dürers hidden in the engraving, father, mother, and multiple sons, the motto is probably another name for Dürer. The distribution of consonants and vowels suggest Latin more than German. I went to the Dürer coat of arms for clues about how Dürer thought of himself. There I found the caelo rebus. His caelo is obviously imbedded imbedded in *Melencolia I*. Then the remaining letters spell just the one common noun *limen*. This meant threshold originally, and came to mean also lintel, doorway, gateway, walls, house, home, boundary path, or limit, according to context. MELENCOLIA then decodes to LIMEN CAELO, the gateway in heaven, which can describe the Dürer coat of arms, the moonbow, the ladder, and more to come. Either this is a most remarkable coincidence or we are on Dürer's wavelength.

0.6 The angel

Everyone speaks of the angel as a woman, but the face is unlike all women of Dürer's invention that I have seen, who are mostly double-chinned, and is rather like his own, idealized. Dürer is famous for prominently inserting his own face into his works. True, *Melencolia* is a feminine noun form, but we have seen that Melencolia is *limen caelo*, the ladder, not the angel, and the traditional angel, *angelus*, is masculine. But this angel wears a dress, so let it pass. The ambiguity seems intentional to me.

Her face is in moon-shadow, her cheek is on her fist like a traditional melancholic, and most say that she is melancholy. They are taken in by the banderole. Her expression is alert and focused, not sad; her gaze is directed slightly upward at the Solid from under her brows with intense concentration, and is not downcast, as was universal for portraits of melancholia; and she wears a slight smile, though as her brows are lowered it might be a saturnine smile. This supports our view that the banderole is not meant to be read as *Melencolia I*.

Some see the angel as Geometria herself. This may well be part of what Dürer meant to be seen, for when the quadrivium are personified, Geometria gets the compasses. A portrait of Geometria with compasses hangs now in the Palazzo Ducale in Genoa, done about a century after Dürer. But in another drawing Dürer gives compasses to an astronomer, so I do not build on this interpretation.

Others infer from the caption in the engraving that the angel is Melancholia herself. But the caption has to be deciphered before it can be applied, and in any case banderoles usually apply to

what is under them. Moreover, we see that she sees a ghost and Panofsky and Yates did not. Since she sees the spiritual we know that she must be *mens*, presumably of Dürer, inspired with creative melancholy by Saturn, and protected from acute melancholia by music and by Dürer's transform of Jupiter's Table. Her wings brush the magic square, the hour glass, and the chemical balance, and nothing else, consecrating these scientific instruments above the artisan tools that litter the ground. Dürer uses his angel wings the way we use pointers today. What they touch is important, even divine.

The angel has a sealed book and a pair of compasses. Some say she has measured the globe that lies before the dog. This is possible. Geometria often is shown measuring the globe, and *The Astronomer*, a Dürer woodcut of 1504, shows an astronomer measuring a globe with compasses under a full moon. But the astronomer studies his globe intently while the angel ignores the globe for the Solid and its ghost. Possibly she has measured the Solid. In any case, we cannot tell whether she sees the mother or the father at any moment, but what she sees does not terrify her or sadden her but absorbs her.

The ladder leaning on the house behind the angel reaches from behind the Dürer Solid to behind the house and for all one knows to heaven. An artist in 1514 who put a topless ladder next to an angel, a house, and an up-turned stone, knew that the educated viewer of the time would see Jacob's ladder, angel, house, and stone of Genesis 28:12, which concludes,

"And he [Jacob] was afraid, and said, How dreadful is this place! this is none other but the house of God, and this is the gate of heaven."

This will be our last gate. The house is gateless, so the ladder must be the gate of heaven here as for the author of Genesis. Ladders to heaven occurred commonly in earlier art, including Dürer's own. Thanks to the coat of arms, a gate of heaven, *porta caeli*, suggests the House of Dürer as well as the House of God. We have found Melencolia: It is the ladder, the original *limen caelo*. The Solid is the successor to Melencolia, *limen caelo prima*.

0.7 The balance

The chemical balance that hangs on the side wall between the angel and the putto is in equilibrium. The putto's head brushes one of its dishes, a wing of the angel the other. There is a balance between putto and angel, first literally, there it hangs between them, and then metaphorically, they have equal divinity. The putto-angel equation seems to be the central message at this point. This supports Yate's interpretation of the triumphant artist and of a balance between the spheres above – the angel – and below – the putto.

Albrecht repeats the message immediately by how he locates the putto and the angel. If the main message were the inferiority of the human artist to the divine, or even 'As above so below,' Albrecht would seat the angel higher than the putto. As though to emphasize that this is not the case, the angel is actually lower on the page than the putto, but this is just the unusual perspective, we are looking slightly down at the two and the angel is nearer to us than the putto. By following lines of the house to the horizon we see that the center of attention is the point on the horizon under the eye of the bat-lizard and the "C" in "*Melencolia I.*" This is a clue and we will come back to it, but for now we use it only to see that angel and putto sit at practically the same level, reiterating the central equation. This equation may seem heretical today but Dürer's own writing repeats it, and the Biblical creation story rather legitimizes it: We are created in the divine image. Leonardo had written earlier, "The divine nature of the painter's science transforms the painter's mind into an imagine of the mind divine," and described the minds of God and the artist as sharing the same

general principles that govern the world. Dürer in 1512 went further. He declared that the gift of painting comes from "influences from above," or astrological influences. He said that it was written that for great kings of the past, "the great masters had an equality with God." He refers here in guarded, doubly indirect discourse, to equal creative powers, not merely shared general principles. This writing, dated only two years before the engraving, makes it surer that this equality is the central equation of *Melencolia I*. But this message is in the background, and a more important one awaits us in the foreground. Incidentally, Dürer's more Lutheran 1523 writings retract this idea. By then artists no longer created but merely synthesized and their influence was not in their stars but in themselves, in their innate dispositions.

0.8 The house of God

The house too is paradoxical and meaningfully polymorphic. From up close we see blank walls supporting a hodge-podge of instruments. The side wall does not seem much wider than the putto leaning against it. It is about the right thickness for an out-house or a chimney, not a house; though its length extends indefinitely into the past to the right. The front wall holds a bell, Dürer's Table, an hour-glass, and a sun-dial. Step back three or four paces, however, or squint, and the magic square and bell merge into a lattice window, the hourglass turns into a bay window, the scales become a side window, and we see a full-sized house with three windows. Assembling familiar objects from unrelated parts in this way, for example, faces from fruits, was an optical illusion often practiced by artists of the era, but here there is allusion as well as illusion. If the house is what the sanctified instruments on its walls open into, it is the humanly perceptible universe, the entire physical cosmos. The ladder and the angel have already told us that this is the house of God, The instrumental windows tell us that measurement and mathematics, not the scriptures and the classics, are our way of seeing into it. This is no longer Agrippa speaking. This is heresy and the trumpet call of Renaissance science.

- Next there is the mystery of the doors in the house.
- But there are no doors in the house.
- Exactly.

The house, we see as we step back, has windows of mathematics, time, and weight, but no doors. When Mr. Doors omits the doors of the house of God we should ask what he means.

Presumably the house is doorless because our mundane faculty of *imaginatio* has no access to absolute reality. This was a common idea by Dürer's time. It had been made explicit by Nicholas of Cusa in his doctrine of learned ignorance and was discussed further by Erasmus, who was an acquaintance of Dürer. Dürer had already written that the human mind cannot know absolute beauty, and in this picture he said the same about absolute truth. We should not assume that he separated truth and beauty as cleanly as some people claim to do today. For example the Latin word that translates as "art" is *scientia*, and the Latin *ars* is often translated as "science," as though the words have waltzed about each other in the course of time. In any case this is a relativistic position already expressed in his writings about beauty. What we see is relative to how we look. From the elemental realm of *imaginatio* we can look at reality through its three windows. But it seems that we can actually reach it only by the ladder, presumably through the spiritual realm of *mens*.

0.9 The millstone

The geometric center of the work falls just under the putto and within the tilted stone wheel. Panofsky and Yates call this a grindstone, and some call it a millstone, but its perimeter is broken while its face is smooth. It would make a passable millstone but a miserable bone-rattling grindstone. Besides, Saturn is traditionally associated with a millstone, not a grindstone. It is the only stone in the engraving that Jacob could have used both as pillow and pillar. By elimination, however, we infer that it also represents the celestial realm of *ratio*. The black hole in its center is a clear silhouette profile of a lean young man, presumably Albrecht again. This third hidden face uses a different technique from the two parental ghosts. The face is hidden as a negative space. To see it we must reverse figure and ground. This was a common way to hide faces at the time. We have already met Dürer's *imaginatio* as the putto, and his *mens* as the angel, so the small silhouette must be his *ratio*.

It is natural to compare *Melencolia I* to the melancholy Dane, who may have come to Shakespeare from the Danish Histories of Saxo Grammaticus. The engraving has three striking dramatic elements in common with the Scandinavian-Shakespearian complex of Amlodhi=Amleth=Hamlet tales: the melancholia of the main character, the nocturnal parental spectre, and the axle-less and skewed millstone. These make it a bit unlikely that Shakespeare's Hamlet and Dürer's *Melencolia I* are completely independent creations. But we have seen no ordinary melancholy in the sense of sadness in *Melencolia I*. Nor was there anything melancholy about Saxo's Amlodhi, who feigned idiocy for a year – the names Amlodhi and Amleth both mean "idiot" – while he industriously prepared cold-blooded vengeance on his fratricidal uncle. Somewhere along the road, the brutal and cunning Icelandic Amlodhi picked up philosophical depth and melancholy and became Shakespeare's Hamlet, but probably not from Dürer.

Identifying Dürer's millstone with the celestial sphere, Agrippa's realm of *ratio*, recalls how the philosopher Giorgio de Santillana and the mythographer Hertha von Dechend interpreted the Icelandic Hamlet's millstone. They have it that Hamlet's millstone is off its axle to represent the wobble in the celestial sphere that causes the equinox and the North Pole to move in the sky in a 26 000 year cycle as the ages pass. Santillana and Dechend did not mention *Melencolia I* in their study of Hamlet's mill, nor did Panofsky and Yates mention Hamlet's millstone in their studies of *Melencolia I*. Neither saw the nocturnal parental ghost in the Solid, who seems crucial for the connection.

0.10 The secrecy

We have broken enough of Dürer's codes to see why he hid so much of this engraving. *Melencolia I* incorporates several aspects of Dürer but also the Agrippan cosmology and psychology, Florentine Neo-Platonism, the graphic artist's claim to divinity, and a communion with his dead parents; and there is more coming. Some of these would have been dangerous acts if they were overt. In the pre-Renaissance cosmology Saturn was the planet of the lowest, while Jupiter was the planet of kings, so Agrippa's allegedly scientific revolution had undertones of political and religious revolution too. Dürer had good reasons of personal safety for never announcing the deeper meanings of *Melencolia I*.

Since Dürer used the Agrippan language, *Melencolia I* must have been readable at least to initiates of the time, but we can understand how its meaning came to be forgotten for so long. The *Malleus Maleficorum*, the witch-hunter's field-book, was gathering its strength in 1514. Eventually accusations of black magic and witchcraft beset Agrippa and other Hermeticists. Johannes

Kepler and his mother were still tormented by such charges as late as 1615, when the uneducated neighbors of his litigious mother took Kepler's science-fiction story of a magical trip to the Moon as autobiographical. Since Jacob sees the ladder only when asleep, and the motto is announced by a creature of the night, Dürer may be presenting *Melencolia I* as a dream, the better to defend himself against heresy charges. Kepler would set his lunar voyage into a dream too, for all the good it did him.

If Dürer never publicly divulged the concealments in *Melencolia I*, one reason could be that the Agrippan revolution failed. It challenged the long-standing authority of the classics and the Scholastics and helped to open the road for still greater reforms, but these overtook it and pushed it off the road. The engraving is dated 1514, Luther nailed his 95 theses to a door in 1517, and Dürer was an ardent Lutheran by 1519. Luther was as intolerant of witchcraft and the Neo-Platonic heresy as the Jesuits. The witch-storm blew harder and Neo-Platonists like Ficino, Agrippa, Pico, and Dee found themselves sailing dangerously close to the wind. Eventually Agrippa would declare in his second work, *De Incertitudine et Vanitate Scientiarum et Artium*, that all science, natural and occult, is vanity and will retreat to simple faith in the Biblical Jesus. Copernicus off-centered the Earth and enthroned not Saturn but the Sun in 1543. He escaped the penalty by publishing posthumously, Kepler likewise. Bruno was rasher and paid the price. Dürer did not settle for posthumous glory but encrypted the dangerous ideas that inspired him. Dürer would have been wise to let the secrets of his anagrams and gematria lapse with the Agrippan doctrine during his lifetime. Later, publishing the meanings in this picture would have hurt its sales, on which Dürer's heirs depended.

Dürer had artistic reasons for concealment as well as practical ones. The first defining characteristic of the Hidden Philosophy is surely that it is hidden. Depicting the hidden is an artistic paradox and oxymoron. Dürer resolved it by transforming the Hidden Philosophy into a Hidden Art. He puts clues to the artist in plain sight in the art, yet hidden from all but the select, just as according to the Occult Philosophy God put important truths about Himself in plain sight in the world and the Bible, yet hidden from all but the initiate.

0.11 The hexagram

Neo-Platonic Hebraicism appears in this picture through its gematria. In another Masterpiece it appears through the connection to Jerome, and in several works he puts the Hebrew scriptures above the Latin and Greek. There is a still more striking Hebraicism hidden in *Melencolia I*. This was the last of the hidden elements in this picture to step forward.

The Dürer Solid soon pales before the vigor of other entities of this picture. We must eventually wonder what could have led Dürer to stretch and truncate an already perfect cube in this way and put it so close to the center of attention; why the artist stands before the cool Solid, not the warm angel. By universal if unspoken labeling conventions, moreover, flying banderoles refer to what is under them; see, for example, Dürer's *Orpheus the First Pederast*, usually called the *Death of Orpheus* despite its perfectly legible banderole. The motto *Melencolia I* therefore must somehow refer to the Solid and its ghostly occupants, not the angel. If people have previously connected the motto to the saturnine angel it is because a polyhedron cannot be melancholy. But Dürer called so much attention to his Solid that we should take it seriously out of respect for him. As we have already seen, the polyhedron is a *limen caelo*, not melancholia.

If we look down on the Solid from the sky still another connection to heaven closes. The plan of the Solid is a hexagram or Shield of David, framed in a hexagon. In 1514 the hexagram was still

a magical device, an amulet, and likely referred to ancient Hebrews, not contemporary Jews. It figured in so-called Practical Cabala, a magical art, not in the Jewish mystical practice of Cabala. It was called a shield because it fended off evil spirits, and more hexagrams were placed in churches than synagogues. Nowadays it usually stands on one point, but a hexagram that stands on two of its points, like Dürer's, is seen on a German altar of Dürer's time. Not long after Dürer's death, the Jewish community of Prague was granted the privilege of a flag and placed the Shield of David on it, beginning the slow evolution of the hexagram from a charm to a symbol of Judaism.

The top and bottom triangles of the Solid project down to form the hexagram. Dürer pioneered the study of solids by their projections, and this projection cannot be a coincidence. Dürer's truncation is actually the simplest way to create a hidden hexagram. The stretch merely puts all the vertices on one circumscribed sphere, as required for mathematical beauty. In short, Dürer circumscribed the cube to Hebraicize it, to give it Biblical venerability.

Dürer uses the vertical dimension of his scene in a traditional way: higher is holier. Angel and putto have equal divinity because they have equal altitude. The discarded tools of artisans litter the ground, while the instruments of science and mathematics are hung carefully on the wall pushing the top edge of the composition. Now the *prima* in the motto explains the stark difference between the left and right halves of this picture. The horizontal axis is time, running from right to left like Hebrew. The ladder to the right is the old *limen caelo*, the ancient Biblical gate of heaven, and the legend decoded announces that the Solid on the left is the new mathetic gate of Heaven. Melencolia and *Melencolia I* sit side by side. The crucible high up at the extreme left edge of the picture might be a prophesy, that alchemy would be the science of the future. Clearly we hung the triptych backwards earlier. Dürer would never have seen himself as forerunner of someone greater, but possibly he saw Jerome as the past, and himself as looking into the future; just as his famous painting in the Alte Pinakothek shows a triangle of mourners weeping over the body of the crucified Jesus, the base of the triangle, while Albrecht himself rises to the apex of the triangle like the second coming. His parents get to heaven by his Solid, not by Jacob's ladder.

The portrait of the angel transfixed by the Solid is indeed a portrayal of Saturn-inspired *em furor melancholicus* in the artist, and the concealments confirm that the artist is indeed Dürer, just as Yates says, but now we can also see that his *mens* looks into the future and sees the mathematical gate of heaven. Now we see why Albrecht put so much weight on this Solid. It does not simply show off his mathematical prowess. It represents a divinely inspired mathematical wisdom, a mathesis. Leonardo had already undertaken a mathematical theory of beauty, and that goal would occupy much of Dürer's later years, but with so little gain for so much work that if he was not obsessed he was at least driven by a *furor melancholicus* to be the Redeemer of the graphic arts. Music was divine because it was mathematical. By claiming Saturnian inspiration and a mathematical basis, Dürer claimed divinity for graphic arts as well. His product would never be much use to artists, but it was a fanfare for the mathematical approach to the universe that would dominate science in another century. His belief in an over-mathematical art is part of the belief of others before and after him in an over-mathematical wisdom in general. Dürer was a confirmed relativist in his mathematical theory of beauty, where he provided transformations to adapt his standard figure to the ideals of each artist. His transformations of the magic square and of the human figure both make expert intuitive use of transformation groups, a concept formalized by the mathematicians Galois and Dedekind only centuries later. With its nave claims and hopes, this piece of Dürer belongs on the distinguished line of mathematical fantasies that joins Pythagoras, Plato, the *Ars Magna* of Ramon Llull and Giordano Bruno, who straddle Dürer in time, the *Ars Combinatorix* of Leibniz, and the Cartesian dream of *Mathesis Universalis* that Leibniz shared. It anticipates Leibniz's vision of people sitting down to calculate the truth about God instead of slaughtering

each other over it.

Making the sterile Solid the center of attention of such a fertile work is a concrete symbol of Dürer's vision of mathesis. It reminds us that once the existence of numbers, angels, and heaven were interlocked in one belief system. To raise the next question I need to distinguish two degrees of mathetic belief.

Matheticists in general say that mathematical ideas are useful for understanding and controlling nature; that it pays to use mathematics. This moderate kind of matheticism I will call the Standard Mathesis. It is the minimum view necessary for theoretical physics today. It was much the view of Francis Bacon, who was no great mathematician himself but promulgated a belief in quantitative methods, which he called the New Tool, over the kind of qualitative reasoning that Aristotle called the Tool, and advanced the systematic use of statistical inference. I associate this view also with Isaac Newton. Dürer conveys the Standard Mathesis by fashioning a window into the House of God from the Dürer Table and a bell. Platonists too can in principle be Standard Matheticists. Plato's belief in the absolute existence of numbers (or other Ideas) was not in itself psychotic, any more than the belief in angels or heaven. Seeing them where no one else can might be psychotic, but the practicing Platonist does not see numbers but only believes in their existence in the realm of Ideas. Presumably Plato was led to believe in the existence of numbers for the same reason that he was led to believe that we were born with many innate Ideas. Namely, we are in fact born with such a great propensity to form some of these constructs that they seem to be there before us, waiting for us to find them. The conceptual step from a Platonic belief in absolute mathematical ideas to the position of evolutionary psychology, which finds at least the simplest of mathematical ideas already innate in us, is therefore a natural one.

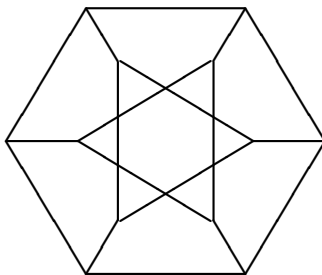
Matheticists of a more extreme kind say that the elements of the natural world itself are mathematical. I refer to this as the *mathetic fallacy*. When we speak of "the angry ocean" or "the cheery sunrise" we project our feelings onto the cosmos, and commit the pathetic fallacy. When we project our reasoning onto the cosmos, identifying physical things with numbers, for example, we commit the mathetic fallacy. When we measure something, we see next to what we measure a scale. We see the numbers on the scale, not in the thing measured. The mathetic fallacy omits the scale and puts the numbers into the thing measured. I associate the mathetic fallacy especially with the names of Descartes and Laplace, and with those who say that God is a mathematician or a geometer.

Now I can raise the question: whether in this engraving Dürer was a prophet of a mathematical physics or an early victim of the mathetic fallacy. In the language of this engraving, the question is whether Dürer regarded numbers (say) to be in the domain of *mens* or *imaginatio*; the Solid or the ball. It is linked to the question of whether the new *limen caelo* that the angel foresees is an extension of the kind of experimental science that Dürer shows in the original *limen caelo*, or is a radically different process of divine revelation, as by mathematical deduction using axioms and rules of inferenced laid down by the creator.

In more modern terms, the question is whether Dürer would today regard particle physics or string theory as the fulfillment of the angel's vision. Some physicists today naively claim that their favorite mathematical constructs have physical reality. Their mathetic fallacy continues an unbroken line thousands of years long. The line of mathematical physics we follow in our own work is a bit less naive and just as long, but we should also remember that the mathetic fallacy has led to great discoveries in the past.

It seems that we can read the answer to this question off the engraving, if our decoding is right. The Solid is not the end of science for Dürer. There are tools and instruments squeezed between it and the left edge, and therefore following it in time. At the highest level we see a crucible

and alembic, prophesying that alchemy-chemistry would be active experimental sciences in the near future. I like to think that *Melencolia I* did more good than harm by its mathetic optimism. Dürer's vision of mathematical redemption may have prepared a receptive ground and underground for the mathematical scientists like Kepler, Galileo, Hooke, and Newton who were waiting not far beyond the left edge of *Melencolia I*.



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0.11.2 References

<http://antwrp.gsfc.nasa.gov/apod/ap010704> shows a photograph of a real moonbow.

<http://gallery.euroweb.hu/html/ddurer2134index.html> shows *Melencolia I* and the Dürer 1523 coat of arms.

<http://mathworld.wolfram.com/DuerersSolid.html> describes and names the Dürer Solid.

Goldman, Shalom. The Sacred Tongue: <http://uncpress.unc.edu/books/T-6957.html>. For the concept of Hebraicism as opposed to Judaism.

Heckscher, William S. *Melancholia* (1541). An Essay in the Rhetoric of Description by Joachim Camerarius. In: Frank Baron, ed., *Joachim Camerarius (1500-1574) . Beitrge zur Geschichte des Humanismus im Zeitalter der Reformation. Essays on the History of Humanism During the Reformation. Humanistische Bibliothek, Abhandlungen 24* (Munich, 1978): 32-103

Erwin Panofsky. *The Life and Art of Albrecht Dürer*. Princeton University Press, 1971. The standard work. It reproduces the Dürer works mentioned here.

Santillana, Giorgio de, and Hertha von Dechend. *Hamlet's Mill: An Essay on Myth and the Frame of Time*. Gambit, 1969. Argumentation for the astronomical interpretation of all myth.

Peter Schreiber. "A New Hypothesis on Dürer's Enigmatic Polyhedron in His Copper Engraving 'Melancholia I.'" *Historia Mathematica* 26, 369-377, 1999. I believe it.

W. Cecil Wade. *The Symbolisms of Heraldry or A Treatise on the Meanings and Derivations of Armorial Bearings*. London: George Redway, 1898.

Frances A. Yates. *The Occult Philosophy in the Elizabethan Age*. London ; Boston : Routledge & K. Paul, 1979. Especially chapter 6.

-- Giordano Bruno and the Hermetic Tradition. Routledge, 1999.