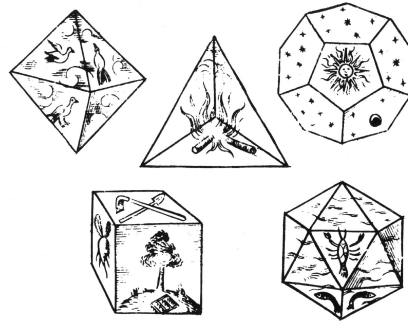


Alchemy

Issues for Discussion

Cosmology and alchemy - demiurgy
Theories of elements and transformations
Democritean vs. Marian alchemy
Practical procedures and mystical meanings
Zosimus, Olympiodorus
Divine Alchemy - salvific procedures
Magic vs. Science; Magic vs. Religion



Empedokles - (circa 495-435 BCE) in Southern Italy - Akragas and Thurii,

4 elements - fire, air, water, earth

Now hear the fourfold Roots of everything:

Enlivening Hera, Hades, shining Zeus,

And Nestis, moistening mortal springs with tears.

Aer vs. Aither - 4 elements and quintessence --- Philotes (love) and Neikos (strife)

Demokritos (c. 460-370) in Abdera - atomic theory of matter; 4 *Books of Natural and Mystic Things*

Plato (427/8 - 347/8) in Athens – Demiurgy in the *Timaues*

matter without form (substance without quality)

form imposed on matter (quality imposed on substance)

For it is laid down by nature as a molding-stuff for everything, being moved and marked by the entering figures, and because of them it appears different at different times. And the figures that enter and depart are copies of those that are always existent, being stamped from them in a fashion marvellous and hard to describe. (Plato, *Tim.* 50bc)

Wherefore it is right that the substance which is to receive within itself all the kinds should be void of all forms; just as with all fragrant ointments, men bring about this condition by artistic contrivance and make the liquids which are to receive the odors as odorless as possible; and all who essay to mold figures in any soft material utterly refuse to allow any previous figure to remain visible therein, and begin by making it even and as smooth as possible before they execute the work. (Plato, *Tim.* 50e)

5 elements and 5 regular solids

changes in quality - changes in state (solid, liquid, gas)

First of all, we see that which we now call “water” becoming by condensation, as we believe, stones and earth; and again, this same substance, by dissolving and dilating, becoming breath and air; and air through combustion becoming fire; and conversely, fire when contracted and quenched returning back to the form of air and air once more uniting and condensing into cloud and mist; and issuing from these, when still further compressed, flowing water; and from water earth and stones again: thus we see the elements passing on to one another, as it would seem, in an unbroken circle the gift of birth. (Plato, *Tim.* 49cd)

Metals as solids which have liquid qualities when fire is applied

Of all the kinds of water which we have termed “fusible,” the densest is produced from the finest and most uniform particles: this is a kind of unique form, tinged with a glittering and yellow hue, even that most precious of possessions, “gold,” which has been strained through stones and solidified. And the off-shoot of gold, which is very hard because of its density and black in color, is called “adamant.” And the kind which closely resembles gold in its particles but has more forms than one, and in density is more dense than gold, and partakes of small and fine portions of earth so that it is harder, while it is also lighter owing to its having large interstices within it,—this particular kind of the bright and solid waters, being compounded thus, is termed “bronze.” And the portion of earth that is mixed therewith becomes distinct by itself, when both grow old and separate again—each from the other; and then it is named “rust.” (Plato, *Tim.* 59bc)

‘rust’ (ῥῶς) as metallic material with its watery element removed – the dry element

-- Greek *xērion* = Arabic *al-’iksīr* = elixir

Aristotle (384-322 BCE) in Athens (former student of Plato)

Matter (*hylē* – lit. ‘wood’, cp. ‘plastic’) vs. form (qualities)

Qualities and elements – hot vs. cold, wet vs. dry

Water = cold + wet

Air = hot + wet

Earth = cold + dry

Fire = hot + dry

Metals as earthy materials with moist exhalations (vapors)

non-metals as earthy materials with dry exhalations (smokes)

We maintain that there are two exhalations, one vaporous the other smoky, and there correspond two kinds of bodies that originate in the earth, 'fossiles' and metals. The heat of the dry exhalation is the cause of all 'fossiles'. Such are the kinds of stones that cannot be melted, and realgar, and ochre, and ruddle, and sulphur, and the other things of that kind, most 'fossiles' being either coloured lye or, like cinnabar, a stone compounded of it. The vaporous exhalation is the cause of all metals, those bodies which are either fusible or malleable such as iron, copper, gold. All these originate from the imprisonment of the vaporous exhalation in the earth, and especially in stones. Their dryness compresses it, and it congeals just as dew or hoar-frost does when it has been separated off, though in the present case the metals are generated before that segregation occurs. Hence, they are water in a sense, and in a sense not. Their matter was that which might have become water, but it can no longer do so: nor are they, like savours, due to a qualitative change in actual water. Copper and gold are not formed like that, but in every case the evaporation congealed before water was formed. Hence, they all (except gold) are affected by fire, and they possess an admixture of earth; for they still contain the dry exhalation. (Aristotle, *Meteor.* III.6 378ab)

Axioms of Alchemy:

- All is One
- what is below is like that which is above, and what is above is like that which is below
- nature delights in nature, and nature conquers nature, and nature masters nature
- wheat generates wheat, human sows human, and gold breeds gold

Practical Alchemy

Substances - metals and non-metals - *somata* and *asomata* (bodies and non-bodies)

metals - pure - gold and silver; base - lead, tin, copper, iron

non-metals - mercury (*hydragyron* - quicksilver) and sulphur (*theion* - divine)

Saturn ♄	Jupiter ♃	Mars ♂	Sun ☉	Venus ♀	Mercury ☿	Moon ☾
lead	tin	iron	gold	copper	mercury	silver

Demokritean alchemy

- dyes and tinctures
- metallurgy and alloying

Marian alchemy

- vaporization
- sublimation
- distillation

Alchemical processes:

chrysis - giving the appearance of gold

melanosis - blackening

leukosis - whitening

xanthosis - yellowing

iosis - reddening or purpling, rusting

katharsis - purification

poiesis - manufacture

dokimasia - testing

diplosis - doubling

sklerosis - hardening

Chrysis

The discovery of sulfur water: mix one drachma of lime and the same quantity of sulfur that has been crumbled in a vessel containing strong vinegar or the urine of a virgin boy. The liquid is then burnt by applying fire below so as to make it like blood; filter to remove sediment and employ it neat. (P. Leid. 87)

Chrysis

For giving to copper objects the appearance of gold. And neither fire nor rubbing against the touchstone will detect them, but they can serve especially for a ring. Here is the preparation for this. Gold and lead are ground to a fine powder like flour, 2 parts of lead for 1 of gold, then having mixed them, knead them up well with gum, and one coats the ring with this mixture; then it is fired. One repeats this several times until it takes the color. It is difficult to detect, because rubbing gives the mark of a gold object, and the heat consumes the lead but not the gold. (P. Leid. 37)

Diplosis

Doubling of *Asem*. Take refined copper of Cyprus, throw upon it equal parts, that is, 4 drachmas of salt of Ammon and 4 drachmas of alum; melt and add equal parts of *asem*. (P. Leid. 10)

Katharsis

The purification of a smoky crystal. Put it in a willow basket, place the basket in the boiler of the bath and leave the crystal there 7 days. Take it out when it is purified, and mix warm lime with vinegar. Stick the stone therein and let it be etched. Finally, color it as you wish. (P. Holm. 16)

Coloring stones

Mix and put together in a small jar $\frac{1}{2}$ a drachma of copper green, $\frac{1}{2}$ a drachma of Armenian blue, $\frac{1}{2}$ a cup of the urine of a virgin youth, and two-thirds of the fluid of a steer's gall. Insert stones each weighing about $\frac{1}{2}$ -obol. Lay the cover upon the pot, lute the cover all around with clay, and heat it for six hours with a gentle fire of olive wood. But if this sign appears, that the cover becomes green, then heat no more, but cool off and take the stones out. Thus you will find that they have become emeralds. The stones are of crystal; all crystal, however, changes its color by boiling. (P. Holm. 43=88)

Coloring fabric

Dyeing in purple with herbs. Take and put the wool in the juice of henbane and lupines boiled sour in water. This is the preliminary mordant. Then take the fruit clusters of buckthorn, put water in a kettle and boil. Put the wool in and it will become a good purple. Lift the wool out, rinse it with water from a forge, let it dry in the sun and it will be first quality. (P. Holm. 118)

Tincturing – the Philosopher's Stone

The philosophers divide all the works of the stone into four: first is the blackening (*melanosis*), second the whitening (*leukosis*), third the yellowing (*xanthosis*), and fourth the rusting (*iosis*). Between the blackening and whitening and yellowing is the earth-making, which is truly the preservation, and the washing of the forms. It is impossible for these things come to be except through the operation of the breast-shaped implement and the unification of the pieces. ([Zosimus], *On the Philosophers' Stone* = CAAG II 199.1-6)

Alchemical equipment: Marian Alchemy

stills

- ambix (alembic)

- tribikos

balneum mariae

kerotakis

Beautiful it is to see the transformations of the four metals – lead, copper, silver, tin – into becoming perfected gold. Having taken salt, moisten the brilliant sulphur, that which is like a honeycomb. Having bound the force of each, add in vitriol and make from them vinegar, the prime-fermented of the work [and of the vitriol]. Step by step in these things you will overpower the white appearing copper by necessity and you will find it after the fifth procedure. Under the three sublimates in succession it becomes what is called gold. See, in conquering matter you receive in full the single-formed out of the multiformed. (Zosimus, *On Excellence* III.1.8)

Method: Zosimus, *On Excellence* III.i.4

All things are woven together and all things are undone again; all things are mingled together and all things combine; and all things unite and all things separate; all things are moistened and all things are dried; and all things flourish and all things fade in the bowl of the altar. For each thing comes to pass with method and in fixed measure and by exact weighing of the four elements. The weaving together of things and the undoing of all things and the whole fabric of things cannot come to pass without method. The method is a natural one, preserving due order in its inhaling and its exhaling; it brings increase and it brings decrease. And to sum up: through the harmonies of separating and combining, and if nothing of the method be neglected, all things bring forth nature. For nature applied to nature transforms nature. Such is the order of natural law throughout the whole cosmos, and and thus all things hang together.

Mystical Alchemy

demiurgy and method: *Corpus Hermeticum* 11.20 4-6, 12-18

Thus, unless you make yourself equal to god, you cannot understand god; like is understood by like. ... Collect in yourself all the sensations of what has been made, of fire and water, dry and wet; be everywhere at once, on land, in the sea, in heaven; be not born, be in the womb, be young, old, dead, beyond death. And when you have understood all these at once – times, places, things qualities, quantities – then you can understand god.

mystical alchemy (*matter and spirit*) - Stephanos II. 241.13-18 Ideler

Copper (♀) like a man has a soul and a body; it is necessary to make orphaned the matter of its body, so that its spirit (*pneuma*) remains, that is, its tincturing element. ... What is its soul? And of what sort is its body? The soul is the subtle part within it, that which is extracted through treatment, that is, the tincturing spirit (*baptikon pneuma*).

releasing *pneuma* from base matter - Zosimus *True book of Sophe* 213.15-18

The allegory (*symbolon*) of alchemy is drawn from the creation of the cosmos for those who save and purify the divine soul chained in the elements, or rather the divine spirit kneaded in with flesh.

Body, soul, and spirit (*soma, psyche, pneuma*) - *Stob. Herm.* 26.13, 28-29

It is a combination and mixture of the four elements; and from it there is exhaled a vapor, which envelops the soul, and is diffused in the body, imparting to both, that is to the body and to the soul, something of its own quality; and thus are produced both the differences between one soul and another and the differences between one body and another.... As long as the soul continues to be in its original condition, it maintains its good order unimpaired; but when either the kneaded mass as a whole, or some one part of it, receives by subsequent addition from without, a portion of one of the elements larger than that which was originally assigned, then there is an alteration in the vapour thence produced, and the altered vapour alters the condition of the soul.

Mystical Alchemy

Olympiodorus and the purification of spirit - Olympiodorus, *In Phaed.* 1.3 = OF 220

Then Dionysus succeeds Zeus. Through the scheme of Hera, they say, his retainers, the Titans, tear him to pieces and eat his flesh. Zeus, angered by the deed, blasts them with his thunderbolts, and from the sublimate of the vapors that rise from them comes the matter from which men are created. Therefore we must not kill ourselves, not because, as the text appears to say, we are in the body as a kind of shackle, for that is obvious, and Socrates would not call this a mystery; but we must not kill ourselves because our bodies are Dionysiac; we are, in fact, a part of him, if indeed we come about from the sublimate of the Titans who ate his flesh.

Olympiodorus' Alchemical Allegory				
Feature in the myth	Mythical Term	Alchemical Term	Alchemical Meaning	Explanatory Note
Titans	τίτανος <i>titanos</i>	ἄσβεστος <i>asbestos</i>	quicklime	τίτανός ἐστι ἄσβεστος ὠοῦ <i>titanos</i> is the lime of the egg
Dionysos	λίθος Διονύσου <i>lithos Dionysou</i>	ἄσβεστος <i>asbestos</i>	quicklime	λίθος Διονύσου ἐστὶν ἄσβεστος the stone of Dionysos is lime
lightning of Zeus	κεραύνος <i>keraunos</i>		fire	fire, applied to the lime, produces vapors (ὁ ἀτμός) which yield a sublimate (αἰθάλη)
material from burnt Titans	αἰθάλη <i>aithale</i> (ἀειθαλής - ever young)	πνεῦμα <i>pneuma</i>	animating spirit of a human body	αἰθάλη δὲ πνεύμα, πνεύματι διὰ τὰ σώματα the sublimate is the spirit which goes through the body

Zosimus and the liberation of spirit from matter

Phos and the chains of ADAM - Zosimus, *On the Letter Omega* 11.1-6 = *MA* 1.104-109 M

When Phôs was in the Garden, spirited along on the wind, at the instigation of Fate they persuaded him, since he was innocent and unactivated, to clothe himself with their Adam, who comes from Fate, who comes from the four elements. But Phôs, for his innocence, did not refuse, and they began to exult to think that he had been made their slave.

the vision of the phiale-shaped altar - Zosimus, *On Excellence* III, i, 11 B = MA 10.2 M

I fell asleep, and I saw a sacrificer standing before me, high up on an altar, which was in the shape of a vial (*phiale*). There were fifteen steps leading up to the altar. And the priest stood there, and I heard a voice from above saying to me: "I have fulfilled the act of my descending the fifteen dark-gleaming steps, and of ascending the light-glowing steps. And he who makes me anew is the sacrificer, by casting away the grossness of the body; and out of necessity I am sanctified as a priest and now am perfected as spirit." And on hearing the voice of him who stood upon the altar, I asked to know who he was. And he answered me in a feeble voice, saying: "I am Ion, the priest of the inner sanctuary, and I submit myself to an unbearable torment. For there came one in haste at daybreak, who overpowered me, and cut me open with the sword, and dismembered me in accordance with the composition of harmony. And he drew off the skin of my whole head with the sword, which he wielded with strength, and he mingled the bones with the pieces of flesh, and caused them to be burned upon the fire he had on hand, until I perceived by the transformation of the body that I had become spirit. And that is my unbearable torment." And even as he spoke thus, and I held him by force to converse with me, his eyes became as blood, and he spewed forth all his own flesh.

Divine Origin of Alchemy

The Emerald Tablet

True, without error, certain and most true: that which is above is as that which is below, and that which is below is as that which is above, to perform the miracles of the One Thing.

And as all things were from One, by the meditation of One, so from this One Thing come all things by adaptation. Its father is the Sun, its mother is the Moon, the wind carried it in its belly, the nurse thereof is the Earth.

It is the father of all perfection and the consummation of the whole world. Its power is integral if it be turned to Earth.

Thou shalt separate the Earth from the Fire, the subtle from the coarse, gently and with much ingenuity. It ascends from Earth to heaven and descends again to Earth, and receives the power of the superiors and the inferiors.

Thus thou hast the glory of the whole world; therefore let all obscurity flee before thee. This is the strong fortitude of all fortitude, overcoming every subtle and penetrating every solid thing. Thus the world was created. Hence are all wonderful adaptations, of which this is the manner.

Therefore am I called Hermes the Thrice Great, having the three parts of the philosophy of the whole world. That is finished which I have to say concerning the operation of the Sun.

The Watchers - First Enoch 6-8 (cp. Gen. 6:1-4)

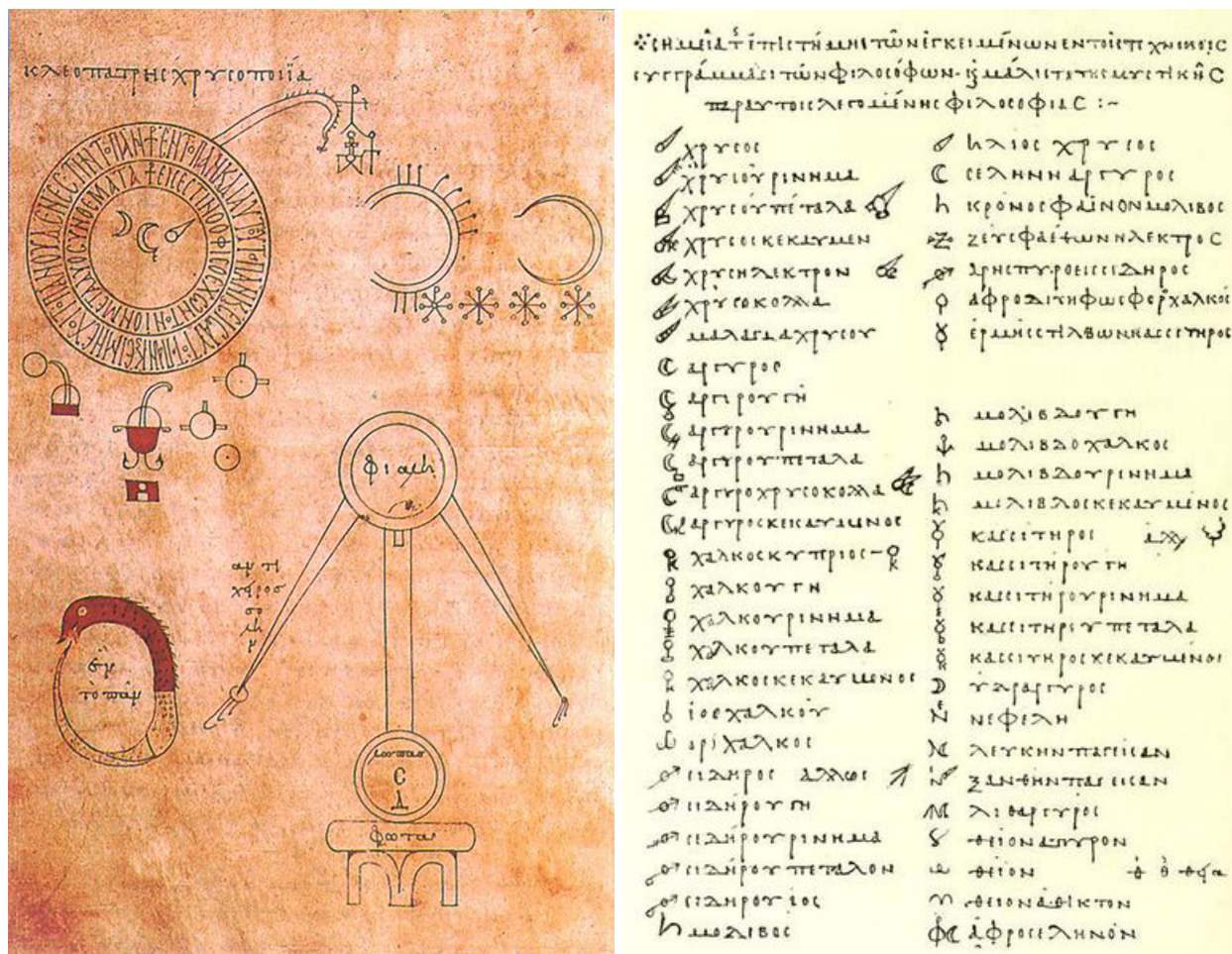
[Chapter 6] And it came to pass when the children of men had multiplied that in those days were born unto them beautiful and comely daughters. And the angels, the children of the heaven, saw and lusted after them, and said to one another: 'Come, let us choose us wives from among the children of men and beget us children.' And Semjaza, who was their leader, said unto them: 'I fear ye will not indeed agree to do this deed, and I alone shall have to pay the penalty of a great sin.' And they all answered him and said: 'Let us all swear an oath, and all bind ourselves by mutual imprecations not to abandon this plan but to do this thing.' Then sware they all together and bound themselves by mutual imprecations upon it. And they were in all two hundred; who descended in the days of Jared on the summit of Mount Hermon, and they called it Mount Hermon, because they had sworn and bound themselves by mutual imprecations upon it. And these are the names of their leaders: Samlazaz, their leader, Araklba, Rameel, Kokabel, Tamlel, Ramlel, Danel, Ezeqeel, Baraqijal, Asael, Armaros, Batarel, Ananel, Zaqel, Samsapeel, Satarel, Turel, Jomjael, Sariel. These are their chiefs of tens. [Chapter 7] And all the others together with them took unto themselves wives, and each chose for himself one, and they began to go in unto them and to defile themselves with them, and they taught them charms and enchantments, and the cutting of roots, and made them acquainted with plants. And they became pregnant, and they bare great giants, whose height was three thousand ells: Who consumed all the acquisitions of men. And when men could no longer sustain them, the giants turned against them and devoured mankind. And they began to sin against birds, and beasts, and reptiles, and fish, and to devour one another's flesh, and drink the blood. Then the earth laid accusation against the lawless ones. [Chapter 8] And Azazel taught men to make swords, and knives, and shields, and breastplates, and made known to them the metals of the earth and the art of working them, and bracelets, and ornaments, and the use of antimony, and the beautifying of the eyelids, and all kinds of costly stones, and all colouring tinctures. And there arose much godlessness, and they committed fornication, and they were led astray, and became corrupt in all their ways. Semjaza taught enchantments, and root-cuttings, 'Armaros the resolving of enchantments, Baraqijal (taught) astrology, Kokabel the constellations, Ezeqeel the knowledge of the clouds, Araziel the signs of the earth, Shamsiel the signs of the sun, and Sariel the course of the moon. And as men perished, they cried, and their cry went up to heaven . . .

The Watchers - Zosimus, *On Tin and the Letter Eta*

It is stated in the holy scriptures, dear woman, that there exists a race of daemons who have commerce with women and direct them. Hermes also mentions them in his book on natural sciences (Phūsika); and the entire book offers a meaning both manifest and hidden. He mentions it in these terms: The ancient and divine books say that certain angels were taken by passion for women. They descended to earth and taught them all of the operations of nature. It is about them (the angels) that our book says that those who became proud were driven from heaven, because they had taught to men all things evil, which do not serve the soul. They were the ones who composed [chemical] works, and from them came the first tradition concerning these arts. Their book is called Chema, and it is from this that chemistry received its name. The book is composed of twenty-four sections; each has its proper name, or letter, or treatise... One of them is called Imous, another Imout.... One section is called Key.... One finds in this book the arts exposed in thousands of words

For Discussion Friday

- How do the narratives in Zosimus (A. *On the Letter Omega* or B. the excerpts from *On Excellence* in Jung) relate to the purification of the soul? To the manipulation of matter?
- Choose one recipe from PGM XII or the Stockholm Papyrus or the Leyden Papyrus (in the alchemy readings packet) to analyze (standard what, why, who, where/when, how questions). Post to Moodle.



Codex Marcianus Graecus 299