Macrocosm and Microcosm:
An Exploration of the Perceived
Alchemical Environment
by
John B. Robinson
University of Toronto
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PREFACE

Environmental Perception Research is a series of Working Papers on research in progress. The papers are intended to be used as working documents by the international group of scholars involved in perception research and to inform a larger circle of interested persons. The series will serve as a means of disseminating results and ideas quickly, especially the research activities of the Working Group on Environmental Perception of the International Geographical Union, and for work relating to the UNESCO Man and the Biosphere Programme Project No. 13, Perception of Environmental Quality.

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Further information about the research programme and this series is available from:

Anne Whyte, Coordinator, Environmental Perception and Policy Working Group,
Ian Burton, Chairman, I.G.U. Working Group on Perception of the Environment,

Institute for Environmental Studies, University of Toronto, Toronto M5S 1A4, Ontario, Canada.
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3. The Ins and Outs of Environmental Hazards; Philip W. Porter, 1978.
This paper concerns the ways in which nature might have been seen by a European alchemist of the early seventeenth century. The purpose is to illustrate the differences in perception that can occur between different observers of what we would call the same object of perception: the natural environment, and thus, by implication at least, to challenge the unquestioned epistemological validity of what we think we see "out there". In addition, by illustrating a different perspective to nature than that which is common today, I hope to demonstrate not only that alternatives to the way we see the world exist but that the existence of these alternatives, as well as some of the components of the perspective discussed in this paper, has important implications for geographical study.

Both the time and occupation of the subject of the paper were chosen for particular reasons. The seventeenth century was a time of upheaval and change, when the world-view of one age was being supplanted by the mechanistic paradigm of the early scientists. As Butterfield remarks:

... in both celestial and terrestrial physics - which hold the strategic place in the whole movement - change is brought about, not by new observations or additional evidence in the first instance, but by transpositions that were taking place inside the minds of the scientists themselves.¹

This shift is often understood as a purely intellectual transformation. In fact, it involved a change in the whole mental framework in terms of which nature was perceived, including the development of a new language by means of which the concepts arising out of this new perspective could be expressed.²

2. See Alexandre Koyré, Metaphysics and Measurement, p. 3
This change occurred over a considerable period of time but it was
during the seventeenth century, called by Whitehead the century of genius,
that it was first clearly articulated and began to have a widespread effect.

Just prior to the emergence of the new scientific mentality, however,
there occurred in Western Europe a phenomenon which may appear to us to
represent the opposite tendency of thought. This was the strong revival,
during the sixteenth and early seventeenth centuries, of widespread interest
in, and practice of, "occult" practices such as astrology, alchemy and
religious Hermetism, stimulated by a renewed interest in Neo-Platonic writings.
In fact, however, the upsurge of interest in mysticism and the development
of modern science were related. Both Kepler and Copernicus, for instance,
were Neo-Platonists who interpreted the purpose and results of their work
in a way which would appear very foreign to us today but which nevertheless
led them directly to one of the most significant aspects of the soon-to-
emerge scientific perspective: a mathematical interpretation of nature. 3

Despite this close relationship, however, the world-view of the Neo-
Platonically-oriented natural scientist was significantly different from
that of the mechanically-oriented scientists, such as Galileo and Descartes,
who were to succeed them. The earlier perspective embodied, for example,
a substantially different interpretation of the nature of external reality
than that which was developed by later scientists and which is familiar to
us today. This can easily be seen in a quotation from Copernicus' earth-
(or rather heaven-) shattering work De revolutionibus orbium caelestium:

In the middle of all sits the Sun enthroned. In this most
beautiful temple could we place this luminary in any better
position from which he can illuminate the whole at once? He
is rightly called the Lamp, the Mind, the Ruler of the Universe;
Hermes Trismegistus names him the visible God, Sophocles'
Electra calls him the All-seeing. So the sun sits as upon a royal
throne ruling his children the planets which circle around him. 4

3. "It is one of the ironies of history that a return to the mystical
doctrine of numbers should have led Copernicus and Kepler to formulate
a system which, through Galileo and Newton, takes us in direct descent
to the mechanical philosophy of the French Encyclopaedists in the
eighteenth century, and of the German materialists in the nineteenth

4. Nicolas Copernicus, quoted in Hugh Kearney, Science and Change, pp. 99-
100.
To Copernicus the sun is more than a celestial body around which the planets revolve, and heliocentricity more than an alternative scientific hypothesis. Rather the heliocentric system restores the sun to its proper place as divine fire, ruler of the planets and bearer and exemplar of the world-spirit or nous which animates the cosmos.

There thus existed a considerable disparity between the perspective of the mystically-inclined natural philosophers and the early scientists, such as Descartes, who also believed that physics could be reduced to mathematics but who had no use for mystical explanations. An even greater disparity existed between the perspective of these later "mechanists" and that of the pure mystics, such as the alchemists. It is difficult to imagine two more different images than that of the young René Descartes, determined to throw over all existing intellectual traditions and, using the light of reason alone, make the whole of science conform to a rational scheme and that of the alchemist, poring over his alembics and retorts, reading ancient books of wisdom and mumbling incantations to himself. Indeed the nature of these two images indicates the relative status of the perspectives that they represent. Descartes' metaphysics, shorn of its theology, has been enshrined in the perspective of modern science and ultimately in the educated consciousness of the modern mind while the alchemist, and the perspective that he represents, are objects of scorn and ridicule.

It is the purpose of this paper to recreate this neglected perspective insofar as it relates to an understanding, or appreciation, of the nature of the external world. In so doing, it will become apparent that, although the alchemist lived in a world which to us would appear different only in detail in its physical nature and characteristics from that which we inhabit today, his perception and experience of that world would be strikingly different from ours. This is more than a mere difference in interpretation. The alchemist lived in his world and it was, and is for his successors, if any, as real (to him) as ours is (to us). The degree of difference between these two worlds, however, means that some preparation is necessary before

5. For an interesting account of the conflict between these two perspectives see the discussion in Frances Yates, Giordano Bruno and the Hermetic Tradition, pp. 432-47.
proceeding to the alchemical writings themselves. For this reason the next section of the paper will consist of an outline of the intellectual context within which our alchemist operated.

Several points should be made about the sources used in this paper and the interpretations given of them. In the first place the paper is based entirely upon secondary sources and a general analysis. It does not represent a detailed or exhaustive investigation of alchemical writings as a whole or even of particular authors.

Secondly there is the question of the degree to which mystical writings can be interpreted literally. All of the writings dealt with in this paper have allegorical meanings. This means that not only is it unclear whether statements concerning nature can be interpreted at face value, but it is often unclear what "face value" is in the light of confusing and (apparently) contradictory utterances. For this reason, some attempt has been made in the following section of the paper to consider the general Renaissance perspective on nature in terms of which the alchemical writings can be evaluated. In general, a literal approach was taken to these writings since the interpretation arising from that approach seemed consonant with this general cultural perspective as well as with the other interpretations that I have seen.

The next section of this paper therefore represents an attempt to outline the perceptual framework in terms of which the alchemical environment\(^5\) can be evaluated. This framework can be seen as the geographical world-view of paradigm which the Renaissance magus employed in seeing nature.\(^6\)

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5. By "alchemical environment", I mean the environment as it would be described by an alchemist.

6. It is, I believe, only in the context of such a reconstructed perspective that it is possible to make sense of mediaeval or pre-modern geographical writings such as, for example, the extensive and fantastic bestiaries and world-maps produced at this time. This argument, however, is beyond the scope of this paper.
Notes on the Sources

Many of the writings quoted in this paper are taken from alchemical writings as quoted in Carl Jung's *Mysterium Conjunctionis*. These writings are primarily derived from a set of collections of alchemical texts published in the sixteenth, seventeenth and early eighteenth centuries (and described in full on pp. 603-8 of Jung's book). In general these excerpts will be referenced to the name of the author or tract followed by the page where the quotation appears in *Mysterium Conjunctionis*.

Most of the remaining quotations of alchemical or mystical writings are derived from Frances Yates' *Giordano Bruno and the Hermetic Tradition*, and in particular from a compressed translation and précis made by Yates of part of the *Corpus Hermeticum* (a collection of mystical writings attributed to Hermes Trismegistus) and from her quotations from the writings of Renaissance magi. The former will be referenced to the Hermetic tract from which they derive and the latter to the author and work that they come from, both followed by the page where the quotation appears in Yates' book.

The rest of the quotations and footnotes will be conventionally referenced to the bibliography.
II

It has long been recognized that the quality and nature of the reality we perceive is at least partly a function of the structures or categories of reality provided by the social context within which the individual lives. The process involved is called socialization, which Berger and Luckmann define as "the comprehensive and consistent induction of an individual into the objective world of a society or a sector of it." \(^7\)

In turn this "objective world" is a human product whereby reality is externalized and objectified in the social institutions. \(^8\)

Under these conditions it is clear that the material described in the next section of this paper must be treated quite differently from a description of everyday experience in the twentieth century. Berger and Luckmann remark that

... a psychology interpreting certain empirical phenomena as possession by demoniacal beings has as its matrix a mythological theory of the cosmos, and it is inappropriate to interpret it in a non-mythological framework. \(^9\)

The purpose of this section of the paper is to try and develop such a "mythological" framework in terms of which an alchemical environment can be understood.

In order to begin to appreciate the world-view of a late Renaissance alchemist it is first of all necessary to make a rather severe mental transposition from the comfortable existence of twentieth century academia to the strikingly different physical and psychic context of early seventeenth century Europe. Contrary to the popular interpretation of the Renaissance, based on the vast outburst of creative genius that occurred during this time, the period of the fourteenth to late sixteenth centuries was a time of physical and social dislocation and disaster. \(^10\)

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8. Ibid., see especially Chapter II.
9. Ibid., p. 175.
10. The following description of the social context of Renaissance Europe is derived primarily from Lynn White "Death and the Devil", in Robert Kinsman (ed.), *The Darker Vision of the Renaissance*, pp. 25-46.
The early fourteenth century had witnessed a shift in European weather patterns to colder weather and universal crop failures in northern Europe. The effect of the resultant famines was compounded by the emergence and spread of the Black Death, which reduced the population of Europe by about fifty percent during the last half of the century, followed quickly by the introduction of syphilis from the New World.

Disease and crop failure were not the only problems facing European society during the early Renaissance. In the fourteenth century a new chapter in European military history had begun, with the introduction of mercenary armies which ravaged the countryside, in times of war for their pay and in peace-time in order to sustain themselves. The Hundred Years War, which lasted until the middle of the fifteenth century, devastated and depopulated France and was followed by the religious wars of the sixteenth century, which resulted in the extermination of Protestantism and Protestants over wide areas of Europe. In turn, there occurred the Thirty Years War in the early seventeenth century, whereby the population of Germany was reduced by approximately one-third.

A further characteristic of this period was the habitual use of torture as an instrument of state. This did not occur only for the private delectation of the torturers, however, since ghastly forms of execution, such as drawing and quartering and hanging in chains, became popular forms of public entertainment. 11

Finally, the period of the Renaissance also marked a time of increased incidence, and repression, of occult phenomena such as demonic possession. The most extreme example of this was the "witch mania" which raged through Europe from the thirteenth to the seventeenth centuries and which has been estimated to have resulted in the deaths of "scores of thousands" of women. 12

11. Whyte notes, for instance that the city of Mons purchased a criminal from a "better-stocked community" in order that the townspeople might have the pleasure of seeing him quartered. He also makes the point that "the popular theatre of the fourteenth, fifteenth and sixteenth centuries was filled with tortures and executions". (Lynn Whyte, "Death and the Devil" in Robert Kinsman (ed.), The Darker Vision of the Renaissance, p. 32).

12. Ibid., p. 36. Contrary to popular thinking, the witch mania did not extend back into the "Dark Ages" but developed only during the twelfth and thirteenth centuries.
The combination of all of these factors results in a picture of Europe quite different than that which is conjured up by a list of Renaissance sculptors and painters. In fact, as the diaries and autobiographies of these artists make clear, Renaissance Europe was the scene of severe social dislocation and discontent, resulting partly from the greatly reduced population base. More important for our purposes, however, is the fact that this context had a significant effect upon the mentality of the people, giving rise, according to Lynn Whyte, to increased levels of morbidity, despair and concern with death and corruption. In fact, Whyte describes the period from 1300 to 1650 as "the most psychically disturbed era in European history".

It is in this context of confusion and despair that we must place the alchemical tradition to which the alchemist belonged. Indeed many of the components of the alchemical art, such as the nigredo, or stage of death and putrefaction through which the alchemical process must proceed, and the contemptus mundi, or disdain of the world necessary to an alchemist, have greater meaning when seen in this historical framework. This does not mean that these characteristics of the alchemical process were derived from this historical context, since alchemy pre-dated the Renaissance.

13. Whyte describes this mentality as necrophiliac. He notes that "In the fifteenth century, when François Villon wrote his ghastly Ballad of the Hanged, Parisians liked to go on picnics to the Montfauçon gibbet outside the city where they could revel under the shredding remains of the dangling dead ... In the later fourteenth and fifteenth centuries, however, especially in Northern Europe, tombs were not infrequently ornamented with nauseously realistic sculptures of disintegrating corpses, and hair and flesh dripping from the bones, with worms and crabs crawling from the eye sockets and exposed ribs. The age of the Renaissance was an epoch not only of human tragedy but also of widespread mental derangement." (Lynn Whyte "Death and the Devil", in Robert Kinsman (ed.), The Darker Vision of the Renaissance, p. 31. This attitude prevailed for several centuries. See for example Bruegel's Triumph of Death, painted about 1560, for a graphic representation of it. Bruegel was also an early painter of landscapes.


15. though not by as much time as the alchemist believed. To him the Hermetic documents upon which his work was based were derived from the Egyptian magus Hermes Trismegistus, who was roughly contemporary with Moses. In fact, however, they were written by Neo-Platonists of the second and third centuries which explains both their congruence with the Neo-Platonic tradition and the fact, miraculous to our alchemist, that they contain references to, and intimations of, the Christian religion and Greek philosophy. See Frances Yates, Giordano Bruno and the Hermetic Tradition, pp. 1-19.
It does, however, help to explain the appeal of alchemy at this time since it is a process whereby this "vale of tears" can be transcended and the essential dignity of man reaffirmed.  

Before dealing with the particular contents of the alchemical worldview, something needs to be said about the alchemical process itself. Alchemy, partly because of its apparent similarity to, and influence on the development of, chemistry, was for long considered a foolish dream of greedy men whose chief aim was to transmute lead into gold. In fact the very prevalence of this image ensured its partial truth: many self-described alchemists were nothing more than just such people who had been tempted by this popular image into trying to find the Philosopher's Stone for themselves.

The real aim of alchemy, however, shrouded it is true in often confusing and deliberately misleading language, was the transmutation, not of metal, but of the soul, a kind of spiritual transformation and rebirth. The physical transmutation of base metals into gold (which was considered the king of metals, corresponding to the sun) was intended as a symbolic representation on the macrocosmic plane of the transformation within man himself.

If a man knows how to transmute things in the greater world ... how much more shall he know how to do in the microcosm, that is, in himself, the same that he is able to do outside himself, if he but know that the greatest treasure of man dwells within him and not outside him.  

The transmutation was only possible if a successful spiritual regeneration within the alchemist had taken place. It represented the necessary macrocosmic correspondence of the spiritual process.

A recognition of the spiritual orientation of the alchemist is crucially important to any interpretation of alchemy. It illustrates, for instance, the close connection between man and nature assumed to exist by him. Paradoxically, it also explains his contemptus mundi or turning away from the world: his real concern is spiritual and not physical. Finally, it

16. It also, of course helps to explain the appeal of the mechanical philosophy which offered an alternative, adn to its adherents superior, escape from the dominant traditions and the world that they applied to.

17. Gerard Dorn, Theatrum Chemicum (1602) in Carl Jung, Mysterium Conjunctionis, p. 54n.

18. As will be seen below, the macrocosm/microcosm analogy used by the alchemists stipulated that any change in the microcosm (i.e. man) must correspond to a change in the macrocosm or universe.
makes us see the real irony in the oft-repeated claim that modern science, in choosing the path of reason over that of magic, has accomplished what all of the alchemists laboured in vain to effect: the transmutation of elements. In fact, modern science, by turning away from the psychically-oriented perspective of the alchemists, has accomplished this physical transmutation at the cost precisely of what the alchemists were attempting to accomplish: the transmutation of the soul, which is no longer considered a valid goal of scientific investigation. It is in the context of this latter orientation that the environment of the alchemist must be viewed.

An important component of the alchemical world-view was its cosmological context. This is much more difficult to ascertain than the "objective" social/physical context since we have now entered the realm of alchemical writings themselves, where nothing is as it seems and consistency is not to be expected. In general, however, the cosmology of the alchemist can be seen as a variation of the dominant Aristotelian system, whereby the celestial bodies, and the heavens themselves, rotated around the earth in spherical orbits.

The exact order of these spheres, and their number, varied considerably among different authorities but all involved a sharp demarcation between the terrestrial and celestial worlds. The former was changeable and unstable and composed of various mixtures of the four primary elements (earth, air, fire and water), the latter was unchanging and perfect, composed of a fifth, more subtle, substance, usually called aether.

All of this, with the complications introduced by Ptolemy to account for the observable discrepancies in the orbits of the celestial bodies, was the common cosmology of mediaeval Europe which had been challenged by the publication of Copernicus' De revolutionibus orbium caelestium in 1543. This challenge, however, had little effect upon the esoteric or mystical cosmology and indeed, as we have seen, Copernicus himself invoked the patron saint of alchemy, Hermes Trismegistus, in support of his theory.19

19. See above, p. 3
The reason for this was partly the confusion surrounding the Hermetic and Neo-Pythagorean writings (Pythagoras, for instance, had taught that both the earth and the sun revolved around a central fire; this was interpreted by some commentators as a heliocentric doctrine) and partly the esoteric way in which these new cosmological doctrines were interpreted by the Hermetists.

To the alchemists, cosmology was not merely a physical description of celestial activity. It was also, and probably more importantly, a representation of the spiritual harmony and meaning of the cosmos. Above all cosmology symbolized cosmic order.

Cosmology was...the reigning science, for by knowledge of the laws of growth and celestial motion it was found possible to divine the appropriate response to any circumstances, to predict and thus to influence the course of events.20

Thus to Giordano Bruno, the concept of heliocentricity was primarily the expression of a profoundly religious and magical truth.

Bruno pushes Copernicus' scientific work back into a prescientific state, back into Hermetism, interpreting the Copernican diagram as a hieroglyph of divine mysteries.21

In order to understand this function of cosmology it is necessary to interpret it in terms of an extremely important component of an alchemist's world-view: the macrocosm/microcosm analogy. According to this concept man, the microcosm, was the mirror of the universe as a whole, or macrocosm, and reflected the cosmological world-order.

Man, therefore, who is an image of the great world, and is called the microcosm or little world (as the little world, made after the similitude of its archetype, and compounded of the four elements, is called the great man), has also his heaven and his earth. For the soul and the understanding are his heaven; his body and senses his earth. Therefore, to know the heaven and earth of man is the same as to have a full and complete knowledge of the whole world and of all the things of nature.22

20. John Michel, City of Revelation, p. xii
22. Vigenerus, Theatrum Chemicum (1613) quoted in Carl Jung, Mysterium Coniunctionis, p. 388. Jung notes that in Greek, the four letters of Adam's name correspond to the four quarters of the world: "anatole (sunrise, East), dysis (sunset, West), arktos (Great Bear, North), mesembria (noon, South)." Carl Jung Mysterium Coniunctionis, p. 388.
In this quotation, written by an alchemist of the late sixteenth century, several components of the alchemical doctrine can be seen, in addition to the microcosm/macrocosm analogy, including the doctrine of the four elements, the division between heaven and earth, and the denigration of the body at the expense of the soul. Some of these will receive fuller treatment below. Of immediate interest, however, is the identification of psychic and material reality illustrated by this quotation. This identification pervades alchemical writings of all kinds. An important consequence of it was the idea that, just as man was cursed by reason of his original sin, so also was nature.

The macrocosm reflected the microcosm, and degenerations in man were paralleled by corresponding deteriorations in the external world. It is important to recognize that this deterioration applied only to the sublunary world which corresponded to man's corrupt body; the heavens, as reflections of his divine soul, were by definition immutable and perfect.

A further corollary of the macrocosm/microcosm analogy was a belief in astrology. If the microcosm reflected the macrocosm, then clearly a change in the latter would affect the former. This idea is expressed in the famous tag of the alchemists: "As above, so below." One function of astrology was to explain the meaning and value of the metals and elements used in the alchemical process. There was thought

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23. Vigenerus (Blaise de Vigenère, 1523-96) was secretary to Henri III of France.
25. Only the moon, as lowest of the heavenly spheres, participated somewhat in imperfection. See below, pp. 29 ff.
26. Or, more accurately, a change in the macrocosm would mirror a change in the microcosm. Alchemists were not environmental determinists on a cosmological scale; if anything the causal relationship worked the other way around. Thus the production of gold mirrored (was caused by?) the spiritual regeneration of the alchemist.
27. This saying is a short form of the first sentence in the Emerald Tablet, the bible of the alchemists: "That which is above is like that which is below". See Titus Burckhardt, Alchemy, pp. 196-201 for a translation and analysis.
to be a direct correspondence between the seven celestial bodies known at that time and the seven primary metals in the following manner:

- Moon - Silver
- Mercury - Quicksilver
- Venus - Copper
- Sun - Gold
- Mars - Iron
- Jupiter - Tin
- Saturn - Lead

Thus,

Astrology and alchemy, which in their Western form both derive from the Hermetic tradition, are related to one another as heaven and earth. Astrology interprets the meaning of the zodiac and the planets, and alchemy the meaning of the elements and the metals.  

Another function of astrology was more personally oriented. Astrological conditions not only influenced the timing and effect of the "Great Work" and the personal activities of the alchemist himself, but they symbolized the stages of self-transformation necessary.

To the alchemists the connection between individual temperament and the positions of the planets was self-evident, for the elementary astrological considerations were the common property of any educated person in the Middle Ages as well as in antiquity. The ascent through the planetary spheres therefore meant something like a shedding of the characterological qualities indicated by the horoscope, a retrogressive liberation from the character imprinted by the archons.

A further important component of the alchemical world-view was the idea, commonly held throughout the Middle Ages (as well as in many other ages and cultures), that nature was animated.

The prime and most immediate experience of matter was that it was animated, which for medieval man was self-evident; indeed every Mass, every rite of the Church, and the miraculous effect of relics all demonstrated for him this natural and obvious fact.

This concept of nature fits in well with the astrological and cosmological ideas expressed above. Since man, the microcosm, was clearly alive, then

29. Carl Jung, *Mysterium Conjunctionis*, p. 230. The ascent through the planetary spheres was an important part of the alchemical process, while the archons are "the seven rulers of the planets, who imprint its fate upon the soul." (Ibid., p. 225)
30. Ibid., p. 124. According to Yates, "Renaissance animism is ultimately
so must also be the world of which he is a replication in miniature. The nature of much alchemical symbolism, which makes heavy use of personification, makes more sense when seen in this context.

It has already been mentioned that it was commonly believed that nature participated in the deterioration of man resulting from the Fall. In fact the idea of man and nature as corrupt, and the corresponding need for spiritual regeneration, was a powerful component of alchemical thinking.

In a broader context this concept took root in what has been called "world-alienation", an attitude "endemic to the Renaissance" which led to a particular perspective that was fundamentally anti-rational or at least non-rational.

(World-alienation) minimized reason's role. It did not reject the conception of reason as a faculty of the soul; reason, it agreed, imparted moral truths, and recommended moral behavior. But it put little stock in man's power to change nature or the world. It held that reason was enfeebled and nature corrupted by the fall; and it turned aside every hope that man's reason could understand or his efforts affect the corrupted currents of this world with reminders of the world's mutability, misery and vanity.31

Although alchemists, like other mystics, also disparaged the value of reason alone, it was precisely this despairing attitude resulting from this world-alienation that alchemy was directed against.32 Alchemy can be seen as a strong affirmation of the potential for spiritual regeneration and it is in the context of this affirmation that some alchemists insisted upon the essential divinity of both nature and man.

Not all alchemists agreed with the idea of a divine (sublunary) nature. There exist two conflicting interpretations of the status of nature in the Hermetic writings, originating undoubtedly from different schools of Neo-Platonists in the second and third century A.D. These are the pessemistic


32. In fact the writings of the early mechanistic philosophers can also be seen as spirited rejections of the despairing attitude described here. In their case, however, this rejection took the form of a strong defense of the human reason.
and the optimistic gnosis.

For the pessimist (or dualist) gnostic, the material world, heavily impregnated with the fatal influence of the stars, is in itself evil; it must be escaped from by an ascetic way of life which avoids as much as possible all contact with matter, until the lightened soul rises up through the spheres of the planets, casting off their evil influence as it ascends, to its true home in the immaterial divine world. For the optimistic gnostic, matter is impregnated with the divine, the earth lives, moves, with a divine life, the stars are living divine animals, the sun burns with a divine power, there is no part of Nature which is not good for all are parts of God.\textsuperscript{33}

In both interpretations spiritual regeneration was necessary. In the pessimistic interpretation, this was not possible within the confines of the corrupt material world, while in the optimistic writings the emphasis is upon the development of the divine component of nature both within and without man. It is important to remember, however, that to the alchemist, the distinction between these two interpretations would be blurred since he was under the impression that all of the Hermetic writings were written by Hermes Trismegistus.

Whether or not nature is divine, man certainly is.

And so, 0 Asclepius, man is a magnum miraculum, a being worthy of reverence and honour. For he goes into the nature of a god as though he himself were a god; he has familiarity with the race of demons, knowing that he is of the same origin; he despises that part of his nature which is only human, for he has put his hope in the divinity of the other part.\textsuperscript{34}

Although the concept of the divine man affecting the physical nature of external reality by dint of his magical labours may seem laughable to us today, it must be remembered that this idea was held, not in the context of an indefinite universe of which our solar system is only a minute speck in the outer arm of a rather small galaxy, but rather in the context of a small, man-centred cosmos.

For the Middle Ages man was in every sense the centre of the universe. The whole world of nature was believed to be teleologically subordinate to him and his external destiny... The prevailing world-view of the period was marked by a deep and persistent assurance that man, with his hopes and ideals, was the all-important, even controlling, fact in the universe.\textsuperscript{35}

\begin{itemize}
\item \textsuperscript{33} Frances Yates, Giordano Bruno and the Hermetic Tradition, p. 22
\item \textsuperscript{34} Asclepius (Corpus Hermeticum) quoted in Yates, op. cit., p. 111
\item \textsuperscript{35} E.A. Burtt, The Metaphysical Foundations of Modern Science, p. 18
\end{itemize}
To this traditional interpretation, the Renaissance magus added another concept, that of the inherent divinity of man.

The Fathers of the Church had placed man in a dignified position, as the highest of terrestrial beings, as spectator of the universe, as the microcosm containing within himself the reflection of the macrocosm ... but the Dignity of Man as Magus, as operator, having within him the divine creative power, and the magical power of marrying earth to heaven rests on the gnostic heresy that man was once, and can become again through his intellect, the reflection of the divine mens, a divine being. The final revaluation of the magician in the Renaissance is that he becomes a divine man.36

It is this divinity that makes possible not only the redemption of the individual, but also that of nature itself.

The process of redemption itself involves one of those paradoxes that are fundamental to alchemical experience.37 It stems directly from the dual interpretation of nature discussed above. Man also, according to this interpretation, contains these two opposites; his body is corrupt and his soul, divine. In order to carry out the alchemical Work, he must discover the means of uniting these two antithetical principles and perform the mysterium conjunctionis, the union of man and nature. This concept corresponded to the Christian idea that man had fallen from an original state of grace, or identification with nature, but involved the heretical idea that the necessary redemption had not been fully accomplished by Christ, but had still to be done by the alchemist himself.38

The alchemical Work therefore involved the union of antithetical principles and the consequent production of the lapis or Philosophers Stone, equivalent to, and physically symbolic of, the spiritual regeneration of the alchemist himself.39

36. Frances Yates, Giordano Bruno and the Hermetic Tradition, p. 111
37. As Jung notes, "Unequivocal statements can be made only in regard to immanent objects; transcendental ones can be expressed only by paradox." Carl Jung, Mysterium Conjunctionis, pp. 501-2.
38. See Carl Jung, op cit., pp. 34-5.
39. The process is of course much more complicated than indicated here. The interested reader is referred to Carl Jung, Mysterium Conjunctionis; Titus Burckhardt, Alchemy; Frances Yates, Giordano Bruno and the Hermetic Tradition; and Charles Ponce, The Game of Wizards for an interpretation of alchemical and other mystical writings.
This then is the context within which an alchemical environment must be seen. Without some knowledge of this background, it is impossible to read most alchemical writings without incomprehension and even annoyance. This reaction emphasizes the necessity of adopting an attitude that involves the willing, if temporary, suspension of disbelief on the part of the reader and of attempting to understand the context within which the alchemical works were written. This is more necessary for the modern reader than for contemporaries of the alchemists since the direction of thought taken by the early scientists and in terms of which the development of modern thought proceeded, involved a sharp distinction between mind and body and the repudiation of the idea that the spiritual component of man and of nature is important with respect to man's activities. The result was an exclusive concentration upon the physical side of the relationship between spirit and matter and the development of a science which as Jung remarks, "deposed the spirit in a manner that would paralyze Dorn (a sixteenth century alchemist) with horror could he see it today".

The next section of this paper will consist of the recreation of an alchemical environment.

39a. The latter is provided by this section of the paper; the former is up to the reader.

40. Carl Jung, Mysterium Conjunctionis, p. 545.
The first thing to be said about an "alchemical environment" is that the phrase appears to be almost a contradiction in terms. In the chapter of his book, The Spirit of Mediaeval Philosophy, entitled "The Middle Ages and Nature", Etienne Gilson notes that, in attempting to determine the mediaeval view of nature, "It would be of little use to consult the mystics; they are not interested in what nature is, but rather in what it signifies". This statement, however, rather begs the question since to the mystics, our alchemist among them, nature is what it signifies. The boundary between signifier and signification is difficult to draw when discussing perception at the best of times; in the case of mystic experience it is impossible.

The concept of an alchemical environment presents difficulties not so much because the alchemists were mystics but because they were pre-modern. The concept of environment as meaning "external nature" is a modern idea. Indeed the conception of nature as external is itself a modern idea. It was not until the late Renaissance, for instance, that "landscapes" began to be painted; previous paintings had included landscape components only as background to the (mainly religious) subjects of the painting. Marjorie Nicolson notes that a delight in nature for its own sake was not a component of popular taste until the eighteenth century.

During the first seventeen centuries of the Christian era, "Mountain Gloom" so clouded human eyes that never for a moment did poets see mountains in the full radiance to which our eyes have become accustomed.

Although Nicolson is here referring specifically to mountains it is clear that a similar attitude prevailed with respect to the rest of nature. This attitude was part of the world-alienation discussed in the

42. This does not imply a criticism of Gilson's dismissal of the mystical perspective in his book. He was not interested in the mystical but in the general mediaeval perspective.
42a. "Environment" was derived from the verb "environ" which meant "to encircle or surround". The first use of "environment" recorded in the OED (used in the modern sense) is in 1830.
43. Marjorie Nicolson, Mountain Gloom and Mountain Glory, p. 3
previous section of the paper and reflected the common conception of a corrupt material world. Nicolson's research shows that for centuries Europeans practices "landscape blindness" with respect to mountains; to a lesser degree the same was also true with respect to the environment in general.44

If the alchemist did not see "the environment", however, he nevertheless did see nature. The following excerpts will provide some indication of what that nature was.

The first and most important of the natural phenomena is the sun. This sun, however, is not simply a celestial source of heat and light.

The sun illuminates the other stars not so much by the power of his light as by his divinity and sanctity. He must be held as the second god. The world is living and all things in it are alive and it is the sun which governs all living things.45 Elsewhere in the Hermetic writings it is declared that the sun is supreme among the gods of heaven; it ranks much higher than any of the planets.46

For the alchemist this high-ranking position was reinforced by the identification of the sun with gold

In alchemy, the sun signifies first of all gold, whose sign it shares. But just as the "philosophical" gold is not the "common" gold, so the sun is neither just the metallic gold nor the heavenly orb. Sometimes the gold is an active substance hidden in the gold and is extracted as the tinctura rubea (red tincture). Sometimes, as the heavenly body, it is the possessor of magically effective and transformative rays. As gold and a heavenly body it contains an active sulphur of a red colour, hot and dry. Because of this red sulphur the alchemical sun, like the corresponding gold, is red. As every alchemist knew, gold owes its red colour to the admixture of Cu

44. Nicolson notes that in a letter to a paper in 1844, "Wordsworth quoted a "shrewd and sensible woman" under whose roof he had lived for a time in his Keswick youth, who used to exclaim: "Bless me! folk are always talking about prospects; when I was young there was never sic a thing neamed." Marjorie Nicolson, Mountain Gloom and Mountain Glory, pp. 17-18.
45. Asclepius (Corpus Hermeticum), quoted in Frances Yates, Giordano Bruno and the Hermetic Tradition, p. 36.
46. Asclepius (Corpus Hermeticum, ibid., p. 56
(copper), which he interpreted as Kypris (the Cyprian, Venus), mentioned in Greek alchemy as the transformative substance. Redness, heat, and dryness are the classical qualities of the Egyptian Set (Greek Typhon), the evil principle which, like the alchemical sulphur, is closely connected with the devil. And, just as Typhon has his kingdom in the forbidden sea, so the sun, as sol centralis, has its sea, its "crude perceptible water", and as sol coelestis its "subtle imperceptible water".

This long and typically confusing passage illustrates the labyrinthic nature of the alchemical perspective. Because nature is interpreted by the alchemist in terms of its significance, each interpretation leads on to others in an almost endless chain of interconnected meaning. The quotation also illustrates the alchemical penchant for paradox. The sun not only contains water, which is paradoxical enough in itself, but it contains both "crude perceptible water" and "subtle imperceptible water". Although we cannot hope to unravel all of the arcane mysteries associated with alchemical symbolism concerning the sun, it is at least clear that for the alchemist "It were vain to believe, as many do, that the sun is merely a heavenly fire".

When writings such as these are interpreted in terms of the perceptual context described in the preceding section, a picture of alchemical nature already begins to emerge. Upon looking at the sun, the alchemist sees not simply a "heavenly fire" but a living principle of divine meaning, a symbolic representation of the goal and purpose of life itself: the spiritual transformation of the alchemist.

As with the sun, so also the moon is much more than a heavenly body. In fact the moon complements the sun and, as lowest of the heavenly bodies, she is the first stepping-stone to divine truth.

For the moon is the way to heaven, so much so that the Pythagoreans named her the heavenly earth and the earthly heaven or star, because in the elemental world all inferior nature in respect to the heavenly, and the heavenly in respect to the intelligible world, is as the Zohar says,

47. Carl Jung, Mysterium Conjunctionis, pp. 92-3.
feminine and passive, and is as the moon to the sun. In the same measure as (the moon) withdraws from the sun, until she is in opposition to him, so does her light increase in relation to us in this lower world, but diminishes on the side that looks upwards. Contrariwise, in her conjunction, when she is totally darkened for us, she is fully illuminated on that side which faces the sun. This should teach us that the more our intellect descends to the things of sense, the more it is turned away from intelligible things and the reverse likewise.49

This quotation illustrates not only the familiar paradoxes but also the virtual obsession with, and respect for, authority characteristic of all alchemical writings and indeed all writing of any kind during this period. In addition, the particular state of mind characteristic of the alchemical perspective is highlighted by the curious use of correct astronomical data to illustrate an abstract philosophical point.

The reference to the feminity of the moon has an ominous aspect for "the moon, standing on the borders of the sublunary world ruled by evil, has a share not only in the world of light but also in the daemonic world of darkness".50 This dark side of the moon is reflected in her changeableness and inconstancy.

This evil side to the moon is not merely metaphorical; it has immediate physical as well as psychic implications.51 The following passage from Paracelsus' *De pestilente* indicates the practical importance of these ideas as well as providing a remarkable insight into the attitudes toward nature held by the alchemists. 52

Now mark this: Wherever there is a disheartened and timid man in whom imagination has created the great fear and impressed it upon him, the moon in heaven aided by her stars is the corpus to bring this about. When such a disheartened timid man looks


50. Carl Jung, *Mysterium Conjunctionis*, p. 25. Jung notes that "The alchemical texts were written exclusively by men, and their statements about the moon are therefore the product of masculine psychology". Ibid., p. 178.

51. Our words lunacy and lunatic, of course, come from luna.

52. Paracelsus was not only an important figure in the history of prejudice but a Hermetic mystic who used in his work both the macrocosm/microcosm analogy and the principle of the three "alchemical" elements of sulphur, mercury, and salt. See Hugh Kearney, *Science & Change*, pp. 114-125.
at the moon under the full sway of his imagination, he looks into the speculum venenosum magnum naturae (great poisonous mirror of nature), and the sidereal spirit and magnes hominis (magnet of man) will thus be poisoned by the stars and the moon. But we shall expound this more clearly to you as follows. Through his imagination the timid man has made his eyes basilisk-like, and he inflects the mirror, the moon, and the stars through himself at the start, and later on so that the moon is infected by the imagining man; this will happen soon and easily; by dint of the magnetic power which the sidereal body and spirit exerts upon the celestial bodies (viz) the moon and the stars in great Nature (viz. the Macrocosm). Thus man in turn will be poisoned by this mirror of the moon and the stars which he has looked at; and this because (for as you can see, it happens quite naturally) a pregnant woman at the time of menstruation similarly stains and damages the mirror by looking into it. For at such a time she is poisonous and has basilisk eyes ex causa menstrui et venenos sanguinis (because of the menstrual and poisonous blood) which lies hidden in her body and nowhere more strongly than in her eyes. For there the sidereal spirit of the stained body lies open and naked to the sidereal magnet. Quia ex menstruo et venenos sanguine mulieris causatur et nascitur basiliscus, ita luna in coelo est oculus basilisci coeli (Because as the basilisk is caused and born from the menstrual and poisonous blood of a woman, thus the moon in the sky is the eye of the basilisk of heaven). And as the mirror is defiled by the woman, thus conversely the eyes, the sidereal spirit and the body of man are being defiled by the moon, for the reason that at such time the eyes of the timid imaginary man are weak and dull, and the sidereal spirit and body draw poison out of the mirror of the moon into which you have looked. But not so that only one human being has the power thus to poison the moon with his sight, no; hence I say that, mostly, menstruating women do poison the moon and the stars much more readily and also more intensely than any man, easily so. Because as you see that they poison and stain the mirror made of metallic material—and what is even more, the glass mirror—much more and sooner they defile the moon and the stars at such a time. And even if at such time the moon only shines on water and the women looks at the water, the moon will be poisoned, and by still many more means, but it would not do to reveal all this clearly. And such poisoning happens for this reason: it is the naked eye of the spirit and of the sidereal body and it often grows new and young as you can see. Just as a young child who looks into a mirror which was looked at by a menstruating woman will become long-sighted and cross-eyed and his eyes will be poisoned, stained, and ruined, as the mirror was stained by the menstruating woman; and so also the moon, and also the human being, is poisoned. And as the moon, when it grows new and young is of a poisonous kind this you shall notice in two ways, namely in the element of water and also in wood, loam, etc.: as this, when it is gathered at the wrong time will not burn well, but be worm eaten, poisonous, bad, and putrid, so is also the moon, and that is why it can be poisoned so easily by merely looking at it and the moon with its light is the humidum ignis (moisture of fire), of a cold nature, for which reason it is capable of receiving the poison easily. 53

This passage has been quoted at length because it so well captures the spirit of a perspective on nature which saw it as something immediate, influential, mysterious and spiritual.  

It is worth noting the spiritual nature of the explanation for the moon's malign powers. The belief that spiritual power (what we might today call psychic power) inhered in natural objects was a natural consequence of the general belief in an animated nature. It stands in sharp contrast to the prevailing belief today, where nature is seen as purely material.

The interactive relationship between man and nature is particularly apparent from this quotation. The man "infects" the mirror, moon, and stars and is later "poisoned" in return by them. The curious wording whereby the man poisons these parts of nature "through himself at the start", and "later on so that the moon is infected by the imagining man" hints at the nature of this close connection. It seems that the moon may act like a mirror indeed, reflecting and magnifying the "poison" which the man sees in himself.

It is suggested in this passage that the celestial bodies are not only important for their direct physical effects on man, but are also related to the rest of nature. The relationship between the moon and the basilisk mentioned here is not an isolated example. Out of the union of the sun and the moon for instance (which symbolized the union of opposites or mysterium conjunctionis itself) comes "poisonous animals such as the dragon, serpent, scorpion, basilisk, and toad; then the lion bear, wolf, dog, and finally the eagle and the raven".

The "production" of these animals is not to be taken literally; the alchemists knew of biological reproduction. Nor is it to be interpreted

54. Jung notes other characteristics of the moon in popular folklore: "The new moon is dangerous at childbirth and weddings. If a father dies at the waning moon, this brings the children bad luck. One also has to bow to the sickle moon or it will bring bad luck. Even the light of the moon is dangerous as it causes the moon-sickness, which comes from the "moon-wolf". The marriage bed, pregnant women, and small children should be protected from the moonlight. Whoever sews by moonlight sews the winding sheet, and so on." Jung, Mysterium Conjunctionis, p. 173.

55. Ibid., p. 144-5.
only mythologically; he is not referring here primarily to the historical (or divine) origin of animals (although this may also be indicated). Instead what is meant is the present and/or potential influence of the sun and moon.

From the celestial bodies there are spread throughout the world continual effluvia, through the souls of all species and of all individuals from one end to the other of nature. Matter has been prepared by God to be the receptacle of all forms; and nature; imprinting the forms by means of the four elements, prolongs up to heaven the series of beings.56

The alchemical view of nature becoming somewhat clearer with this excerpt from the Corpus Hermeticum. Nature is seen as a vast interconnected web, but these interconnections occur in a way that would be entirely foreign to a modern ecologist. They imply a perspective which is not merely descriptive but which has specific practical applications.

The methods of sympathetic magic presuppose that continual effluvia of influences pouring down onto the earth from the stars of which the author of the Asclepius speaks. It was believed that these effluvia and influences could be canalized and used by an operator with the requisite knowledge. Every object in the material world was full of occult sympathies poured down upon it from the star on which it depended. The operator who wishes to capture, let us say, the power of the planet Venus, must know what plants belonged to Venus, what stones and metals, what animals and use only these when addressing Venus. He must know the images of Venus and know how to inscribe these on talismans made of the right Venus materials at the right astrological moment. Such images were held to capture the spirit or power of the star and to hold it or store it for use. Not only the planets had attached to each of them a complicated pseudo-science of occult sympathies and image-making, but the twelve signs of the zodiac each had their plants, animals, images, and so on, and indeed so had all the constellations and stars of the heavens. For the All was One, united by an infinitely complex set of relationships.57

Although Yates is here talking specifically about the Hermetic magician, the perspective that she describes applies also to the alchemist. As she notes elsewhere

The Hermetic science par excellence is alchemy; the famous Emerald Tablet, the bible of the alchemists, is attributed to Hermes Trismegistus and gives in a mysteriously compact

56. Asclepius (Corpus Hermeticum), quoted in Frances Yates, Giordano Bruno and the Hermetic Tradition, p. 35.
57. Ibid., p. 45
form the philosophy of the All and the One.

Thus, to the alchemists, nature is linked from top to bottom in a spiritual plane. The physical influence that exists between the moon and a menstruating woman, or between the stars and man, is the result of these all-pervasive spiritual effluvia. It is only to be expected that this spiritual connection would have a physical effect.

The emphasis upon the spirituality of nature comes as no surprise; it is a natural implication of the macrocosm/microcosm analogy. Man has a double nature, therefore it is necessary that the material world, as a large-scale replication of the microcosmic reality, must also consist of both matter and spirit.

Being spiritual, the material world had to be possessed of a soul and the concept of the anima mundi had its roots in the Neo-Platonic tradition that provided the philosophical basis for all of the alchemical texts. To the alchemists, however, the concept of the soul of the world had a special meaning.

The anima mundi was conceived as that part of God which formed the quintessence and real substance of Physis.

It permeated all substances since

(Bruno's) view of the Third Person (i.e. the Holy Ghost) as the anima mundi or the Virgilian "spiritus intus alit" was an interpretation frequently made in the Renaissance.

The anima mundi was directly linked to the spirit of the world.

Between the soul of the world and its body there is a spiritu mundi which is infused throughout the universe and through which the stellar influences come down to man, who drinks them in through his own spirit, and to the whole corpus mundi.

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59. Carl Jung, Mysterium Conjunctionis, p. 280
60. Ibid., p. 525
61. Frances Yates, Giordano Bruno and the Hermetic Tradition, p. 350. This view was not without its dangers. Yates notes that one of the charges for which Bruno was condemned and burnt at the stake by the Inquisition may have been this belief that the Holy Spirit is the anima mundi. See p. 354.
62. Ibid., pp. 68-9
The concept of spiritus mundi is not only central to the alchemists' experience of nature, it is of great importance to the practice of their art.

God or the prima materia is without form. There derives from the formless incorporeal One the series of

- Intellectus or mens
- Spiritus
- Materia, or material nature, the elements and the elementata

Spiritus descends from the above to the below and resides in the place where it is caught (ubi captus est). Or, as it is put in another chapter:

"The virtues of the superior bodies are the form and power of the inferiors, and the form of the inferiors is of a material related to the virtues of the superiors; and they are as it were joined together, because their corporeal material (of terrestrial things) and their spiritual material (of the stars) are one material. The whole art of magic thus consists in capturing and guiding the influx of spiritus into materia." 63

The alchemical meaning of the mediaeval cosmology is beginning to emerge. The seven "planets", as "superior bodies" give "form and power" to the "inferior" or terrestrial bodies. The physical nature of terrestrial things belong to them, their spiritual nature is derived from God through the planets. Each part of sublunary nature is linked not only to those other parts of nature that possess the same spiritual qualities but also to those celestial bodies from which those qualities are derived.

For...diverse living things represent diverse spirits and powers, which beyond the absolute being they have, obtain a being communicated according to their capacity and measure, Whence God as a whole (though not totally but in some more in some less excellently) is in all things. For Mars is more efficaciously in natural vestiges and modes of substance, in a viper or a scorpion, nay even in an onion or garlic, than in any inanimate picture or statue. Thus one should think of Sol as being in a crocus, a daffodil, a sunflower, in the cock, in the lion; and thus one should conceive of each of the gods through each of the species grouped under the divers genuses of the ens. For as the divinity descends in a certain manner inasmuch as it communicates itself to nature, so there is an ascent made to the divinity through nature. Thus through the light which shines in natural things one mounts up to the life which presides over them. 64

This relationship between natural objects and celestial bodies is not only a spiritual one. Our alchemist would believe, along with Cornelius Agrippa, that

... the "character" of the star is imprinted in the object belonging to it, so that if you cut across the bone of a solar animal or the root or stem of a solar plant, you will see the character of the sun stamped upon it.65

The quotation from Bruno also indicates a significant difference between the natural and the man-made environments. For the spirit of the celestial bodies is found more in living things (i.e. all of the natural world), than in any man-made artifact. This, of course, is only as it should be. Nature, including man, was made by God and thus infused with a bit of the spiritus mundi through the intermediary of the celestial bodies. Man-made things, however, are not of divine origin, except secondarily, and thus are not alive and do not have any soul or spirit. Indeed it was one of the main purposes of Renaissance magic to make statues, talismans and images which could be infused with life and spirit. This is the meaning of the last line of the quotation on page 36 above: "The whole art of magic thus consists in capturing and guiding the influx of spiritus into materia". In order to accomplish this, of course, it is necessary for the magician to make use of the divinity within him and in so doing to foster a curious kind of identity with the natural world.

Unless you make yourself equal to God, you cannot understand God: for the like is not intelligible save to the like. Make yourself grow to a greatness beyond measure, by a bound free yourself from the body; raise yourself above all time, become Eternity; then you will understand God. Believe that nothing is impossible for you, think yourself immortal and capable of understanding all, all arts, all sciences, the nature of every living being. Mount higher than the highest height; descend lower than the lowest depth. Draw into yourself all sensations of everything created, fire and water, dry and moist, imagining that you are everywhere, on earth, in the sea, in the sky, that you are not yet born, in the maternal womb, adolescent, old, dead, beyond death. If you embrace in your thought all things at once, times, places, substances, qualities, you may understand God.65a

It was partly this belief of the magus that he could make himself

65. Frances Yates, Giordano Bruno and the Hermetic Tradition, p. 132
65a. The Mind to Hermes (Corpus Hermeticum), quoted in Frances Yates, op. cit., p. 32.
"equal to God" and create life, that resulted in this magic being condemned by the Church.65b

The outlines of the alchemical "environment" are now clear. The alchemist lives in a nature that is, like himself, animated and possessed of a soul. This nature is thus more than a mere "material world"; it can interact with man on a spiritual level. The relationship of human nature and external nature is almost one of identity. The quaternity of elements and qualities of which the external nature is composed66 are also those which determine the temperament of each individual by means of the four "humours".

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65b. Apparently as much out of fear that he would succeed in bringing down demons from the stars as anything else. See Frances Yates, op cit., p. 10

66. The alchemist's three elements sulphur, mercury, and salt were produced from the four traditional elements: "Thus the fire began to work upon the air and brought forth Sulphur. Then the air began to work upon the water and brought forth Mercurius. The water began to work upon the earth and brought forth Salt. But the earth, having nothing to work upon, brought forth nothing, so the product remained within it. Therefore only three principles were produced, and the earth became the nurse and matrix of the others." Anon. De sulphure, (?), quoted in Carl Jung, Mysterium Conjunctionis, p. 459.
In the terrestrial world, there exist classes of beings related to each other by means of their particular mixtures of the elements or qualities and by their relationship to the planets. This terrestrial nature is mutable and corrupt but still contains within it the spiritus mundi. Like the alchemist himself, it possesses a "higher" or a "lower" nature and is thus capable of redemption.

Above the sublunary world there exists the celestial realm, home of the seven planets. This celestial world, in contrast to terrestrial nature, is perfect and immutable. To the alchemist the seven planets were presided over by their seven rulers or archans, who mediated the flow of spiritus anima from God to the lower world.

Above all nature was man-centred and man-sized. For only man was made in the image of God and the whole of nature or macrocosm was a reflection of each man or microcosm. The earth, the abode of man, was at the centre of a finite universe, enclosed by God.

To the alchemist, however, geocentricity was not just a description of physical reality. Much more importantly, it reflected spiritual and mystical reality. It is for this reason that Giordano Bruno could accept the Copernican hypothesis within his mystical perspective; he interpreted it primarily in a mystical way.

(Bruno) patronizes Copernicus for having understood his theory only as a mathematician whereas he (Bruno) has seen its more profound religious and mathematical mysteries. 67

It is clear that the modern view of a landscape, involving the establishment, for instance, of a degree of aesthetic "distance", would be incomprehensible to the alchemist. This is not a matter of aesthetic education; such distance would be literally impossible for the alchemist whose world was as much a part of him as he was of it. Or rather it is a matter of education, but not an education in aesthetics or art appreciation. For the world of the alchemist and indeed of mediaeval man in general is as incomprehensible to us as ours would be to him. The urge to interpret the

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67. Yates, op. cit., p. 155
excerpts quoted above in a metaphorical way is perhaps only less compelling than the tendency to see them as the gibberish of disturbed minds. The gulf between the view of nature outlined above and that common today is vast and it has been created largely by a process of education whereby the whole framework in terms of which reality (including external nature) and knowledge are interpreted has changed. 68

We have gone from an animated macrocosm which was the mirror of human nature to a purely material world peopled by sets of mysteriously linked minds and bodies, who may or may not feel that they have a soul.

It is the purpose of the next part of this paper to briefly examine the nature of this shift and its implications for geographical study.

68. i.e. There has occurred a shift in the dominant cultural paradigm. See my paper The Quagmire of Phenomena for a description and analysis of this concept.
Thanks largely to the work of men like Copernicus, Kepler, Galileo, Descartes and Newton, during the late 16th and 17th century, there occurred a revolution in the way the world was perceived. This revolution involved the complete upheaval and overthrow of the mediaeval world-view. First the geocentric cosmology was challenged, by Copernicus and Kepler, the latter asserting the existence of a primarily mathematical structure of the cosmos defined not in familiar qualitative terms but purely quantitatively. Galileo then illustrated the applicability of this quantitative mathematical analysis to terrestrial dynamics, a procedure which necessitated an emphasis upon the previously unimportant concepts of space and time at the expense of the traditional terms of Aristotelian physics such as substance, accident, substantial form etc. It also required that the treatment of nature divorced from common sense could be trusted to correspond to the findings of the new physics.

Discovering the predictability and regularity of natural phenomenon subtly undercut the magical view of nature and paved the way for the work of Descartes who, deliberately rejecting previous philosophical traditions, attempted to build up a philosophy and physics based upon a clear-cut dualism of spirit and matter and the belief that the structure of nature was fundamentally mathematical. Descartes thus formalized the deanimation and despiritualization of nature at the same time that he dethroned sense-perception and substituted mathematical principles as the epistemological arbiters of external reality.69

It only remained for Newton to explicitly join this mathematical dynamic with the empirical tradition of such scientists as Boyle and Harvey, for the new physics to emerge triumphant. Along with the scientific fruits of this new enterprise, there emerged a new approach to external reality which, because of the practical success of modern science, has almost entirely supplanted the old perspective. The validity of this new perspective, however, on other than a purely scientific level, has never been properly assessed, in part because it was only implicitly contained within the new scientific approach and tended to be assimilated unconsciously.

69. By means of his dualism, Descartes created immense difficulties for his successors, centering around the problem of the relationship between spirit and matter. The normal response to this problem was refuge in either idealism (all is mind) or materialism (all is body).
In discussing the development of philosophy during the last three centuries, Burtt notes that:

It might be that under cover of this change of ideas modern philosophy had accepted uncritically certain important presuppositions, either in the form of meanings carried by these new terms or in the form of doctrines about man and his knowledge subtly insinuated with them--presuppositions which by their own nature negatived a successful attempt to reanalyse, through their means, man's true relation to his environing world.70

What this means is that the 'scientific' concept of nature derived from the enormously successful new physics supplanted the previous perspective, which, because of its obvious inferiority in terms of material applicability, was lost without regret. The educated consciousness of the Western world has developed almost entirely in terms of the new perspective to the point where no viable alternative appears to exist. For us, nature is something entirely material, something "out there" which we can only interact with on a purely physical level. The only exception to this is the possibility of an aesthetic or emotional reaction to nature, but this is conceived of as something entirely within ourselves.

During the last century there has occurred a "revolution" in physics that, in scientific terms, at least, may represent as profound a shift as was accomplished during the 17th century. As yet, however, the new physics has not had a significant impact upon popular consciousness, at least not with respect to conceptions of the nature of external reality.

It is because of the success of the "Newtonian" world-view that the writings discussed in the previous two sections of this paper are so foreign to us today. It was the purpose of those sections to indicate the nature and extent of that difference. Even granting, however, that a substantial transformation has taken place, it is not so clear why this is a problem. What is clear is that in the three and a half centuries since the death of Newton, science and technology have made more progress than in the more than twenty centuries of recorded history that preceded him. The rest of this section of the paper will be devoted to an explanation of why the nature of

70. E.A. Burtt, The Metaphysical Foundations of Modern Science, p. 27.
an alchemical landscape is significant today, and in particular why it is relevant to geographical study.

The alchemical environment described above presented the picture of an animated and spiritual nature that was intimately connected with the activities, feelings and thoughts of man. An awareness of the existence and nature of this perspective is important for environmental geography for several reasons.

In the first place it provides the opportunity of evaluating, in its own terms, an interpretation of nature significantly different from that prevalent today in the West. In an age where environmental deterioration is rampant and calls for a "new" environmental ethic, to examine the characteristics, and speculate on the implications of, alternative perspectives.

Secondly, this analysis allows the realization that, far from being immutable, the attitudes toward nature prevalent in the Western world today are little more than three centuries old. If John Passmore is right, and we cannot graft foreign intellectual traditions onto our thinking in order to develop an appropriate environmental ethic, then the fact that the seeds of alternative perspectives exist within our own intellectual tradition is important. This is not to suggest that an alchemical viewpoint is necessary for a healthy environment. It does however indicate that alternative perspectives are available and that the process of paradigm-shift may not be as arduous as might be thought.

Perhaps more important than the illustration of the existence of a different perspective are the contents of that perspective. The implications of these contents are most vividly expressed in the macrocosm/microcosm analogy that pervaded all alchemical thinking. While environmentalists today decry the loss of the awareness that man is a part of nature, one component of a vast interconnected web, this awareness was to the alchemist only half of the story. To him nature was also part of man and, 71. John Passmore, *Man's Responsibility for Nature*, p. 40. Passmore, however, would disagree that a "mystical" perspective has anything to offer us in the way of appropriate environmental ethics.
like Origen, he might say:

Understand that thou hast within thyself herds of cattle...flocks of sheep and flocks of goats...Understand that the fowls of the air are also within thee. Marvel not if we say that these are within thee, but understand that thou thyself art another world in little, and hast within thee the sun and the moon, and also the stars...Thou seest that thou hast all these things which the world hath. 72

From an alchemical viewpoint what has been lost is not so much the recognition that man is part of nature. This is the recognition of the existence of the macrocosm and cannot be denied by anyone possessed of sensory perception. 73 Rather the loss is of the awareness of the microcosm, the recognition that nature is a part of man and therefore its external degradation mirrors internal "corruption".

Lest this seem palpably absurd, it is important to recognize that perception is not a neutral process involving the passive reception of what is really "out there", but is instead an active and creative process whereby reality is "constructed" by the perceiver, and then, as it were, projected out through his or her eyes. 74 In these terms it can indeed be asserted that the "flocks of sheep" are, originally at least, inside us. It can, of course, be argued that this modern and rather abstract interpretation of the macrocosm/microcosm analogy was certainly not the meaning attached to it by the alchemists themselves or by Origen. In fact, this is precisely the point made by Carl Jung in his monumental study of alchemical writings and symbolism. Jung notes that "The misfortune of the alchemists was that they themselves did not know what they were talking about." 75

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73. What environmentalists seem rather to be saying is that we do not assign sufficient importance to the continued viability of the natural systems upon which we so obviously depend.


In his explanation of this statement, however, Jung provides further support for the argument presented here. In general, alchemical activity is explained as a process of psychic projection:

... chemical matter was so completely unknown to (the alchemists) that it instantly became a carrier for projections. Its darkness was so loaded with unconscious contents that a state of participation mystique or unconscious identity, arose between them and the chemical substance which caused this substance to behave at any rate in part, like an unconscious content.76

Thus, far from exhibiting insights into the true nature of material reality, "the alchemical projections sketch a picture of certain fundamental psychological facts and, as it were, reflect them in matter."77

According to this interpretation, the alchemists are not dealing with material reality at all and Jung can, therefore, describe the "spirit of alchemy" as "the conscious projected into heavenly space and external objects."78

The significance of this argument is that it illustrates, with respect to a different perspective, the degree to which reality is constructed by the perceiver. The extent of the difference between the alchemical perspective and our own allows us to see the process of construction clearly. It is important to recognize, however, that the same argument also applies to the perspective on nature dominant today. What we see in nature and even what we see as nature are also the result of certain underlying preconceptions about that reality. It might not be too much to say that what we see are those preconceptions, fleshed out as material reality.79

It is therefore no more possible for us than for our alchemist to assert that man and nature or mind and matter are distinct or mutually exclusive realities. This point is made forcefully by Burckhardt.

76. Carl Jung, Mysterium Conjunctionis, p. 250.
77. Ibid., p. 106.
78. Ibid., p. 196.
79. This argument suggests a reversal of the primacy of "Being" over "Appearance" that might shock not only our Neo-Platonic alchemist, but most adherents of the dominant Western philosophical traditions. See Hannah Arendt, "Reflections (Thinking--Part 1)", The New Yorker, November 21, 1977, for a stimulating discussion of this topic.
The rationalistic view forgets completely that everything which it may express concerning the universe, remains a content of human consciousness, and that man, precisely because he can look at his physical existence from a higher point of view—as if he were not, in fact, bound to this earth—clearly demonstrates that he is the cognitive centre of the world.  

The world that we take for granted, and which forms the basis of environmental and indeed geographical study of all kinds, only exists in the way it appears to us precisely because we believe it to so exist, i.e. because it is not conceptually distinct from us but rather, is in part at least, a construction of the mind.  

The contradiction implied in constructing a nature based on the assumption that man and nature are separate "things" (and thus on the assumption that such construction is impossible) underlies much of social science today.  

What is needed, instead, is a recognition that the world so constructed is, like all other worlds, merely one of a number of possible constructions, and furthermore that its characteristics are more a reflection of the mental preconceptions of our culture than they are of the "true" nature of external reality itself.  

If scientific knowledge went hand in hand with a spiritual evaluation of appearances, one would be able to see, in the successive abandonment of all so to say closed systems, a proof that every vision of the world is no more than an image or reflection and as such is in no wise unconditional.  

This suggests that one of the chief subjects of geographical study should be the investigation of the means by which the "world" is created, its implications, what alternatives are available and how they might be implemented. That this has not occurred is largely due to the sharp distinction that has been made between spirit and matter and the consequent belief that the latter exists independently of, and unaffected by, the former, and thus that the world we see is independent of our seeing. If, as Jung has elsewhere suggested, the conceptual separation of man and nature is a  

81. Ibid., p. 53.
prerequisite for (self) consciousness, then our alchemical environment has shown that the separation of spirit and matter used not be part of this process.

The environment of the alchemists cannot simply be dismissed with the statement that they were wrong in what they saw in nature, since any worldview is only provisional and reflects certain preconceptions. If nothing else, the findings of relativistic and quantum mechanical physics during this Century, should make us pause when we are tempted to make dogmatic assertions concerning the "true" nature of external reality.

This paper has illustrated the existence of a different perspective than that common today and argued that an awareness of this perspective has much to teach us both concerning the way in which world (views) are constructed and with respect to some of the contents of this alternative. The suggestion made in conclusion is that geographical study should be actively, and explicitly, involved in the examination of the process of "world"-construction. If geography is the study of man and his world we should realize that the nature of the latter cannot simply be taken for granted.

82. "The self, regarded as the counter-pole of the world, its "absolutely other", is the sine qua non of all empirical knowledge and consciousness of subject and object. Only because of this psychic "otherness" is consciousness possible at all." Carl Jung, "The Psychology of the Child Archetype", Essays on a Science of Mythology, p. 90.

83. It may be true that they "did not know what they were talking about". In the absence of an explicit recognition of the relativity of perception, the same is true of us.
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General Bibliography


