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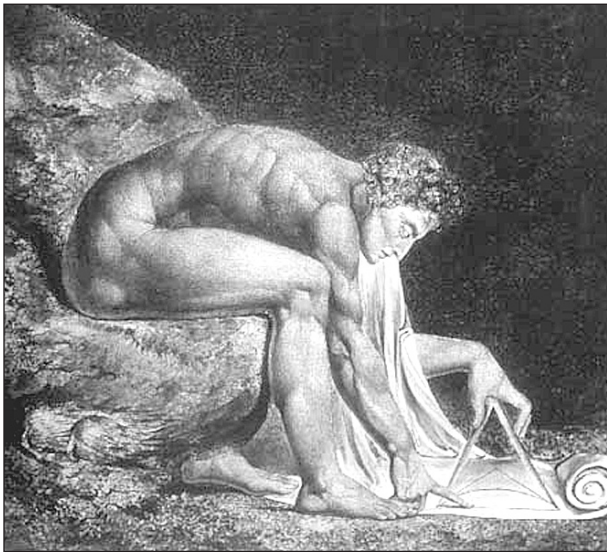
from the RQ Archives

Science & the Death of Nature

Introduction by David Kubrin

The following four articles, though written in the early 2000s, are the offspring of an epiphany that ambushed me in London one fine Spring afternoon in 1970.

I had a year off from teaching at Dartmouth College to do further research in London at the British Museum and in Cambridge at its many libraries to follow up on my well-received scholarly analysis of Isaac Newton, that pivotal figure in what is called the scientific revolution. That revolution established the dominant role science has played since as the key ontological, epistemological, and social power-broker in Western (hence, in world) culture from c. 1650 on.



Isaac Newton by William Blake

My wife Karen bought me a gift from the Tate Gallery, a reproduction of William Blake's scathing engraving portraying Newton, his godlike muscular back leaning away from the fecund lushness of the rock on which he sits, filled to bursting with the rich colors and textures and mystery of nature's animate powers, while Newton's attention is instead focused single-mindedly on

the lifeless geometrical abstractions traced on the flat surface at his otherwise featureless feet.

As I passed the tacked-up print one day, I had what came to me with the force of a revelation, of matters mighty, indeed, conceivably pivotal in world history. (Bear with me!)

I had just returned to my London flat near Hampstead Heath to fetch juice for me and Karen, both of us tripping on mescaline in the very pleasing yard of our friends' flat a block away.

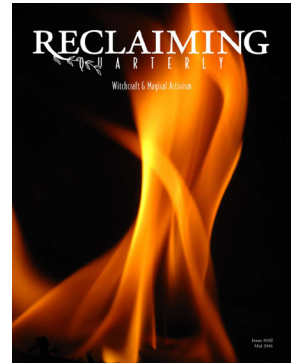
Looking at Blake's engraving, I realized for the first time that if he had known about the real Newton, the one I had been discovering in recent months while

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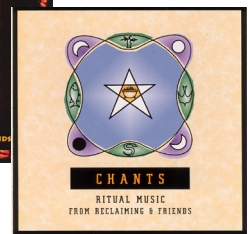
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Author's Introduction

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rooting around in his (and other 17th century) manuscripts, Blake would have realized his kinship with Newton.

For Isaac Newton himself believed in the same animated nature, pregnant with mysterious powers, matter itself more spiritual than material, accessible through the magical practice of alchemy. Blake had seen it in similar ways.

The Newton whom Blake resented was the natural philosopher who reduced the world to a machine. That is the Newton we all learn about.

But the real Newton did not believe in that conceit (though he used it). The real Newton on a number of occasions actually wrote that all of nature had a form of life in it (although the real Newton, knowing full well what was safe -- for political as well as religious reasons -- to say and publish and what was not, crossed such heresies out). They were not to be published, only circulated perhaps to a select few. Mechanism, the basis of his *Principia* (1687) and *Opticks* (1704) explained nature at a superficial level, he thought, how forces act on bodies. But real understanding, Newton believed, would come from discovering the forces that acted in bodies. At the heart of matter, where it is anything but inert. That is why alchemy loomed so large in his attentions, with his reading and experimenting in alchemy especially pronounced both before and after he wrote his monumental *Principia Mathematica*.

1970 was a critical time in the West. The 60s had brought forth a rich froth of revolt. Fantasy, eroticism, and insurrection that was many things at once and different for everyone. In that roiling decoction, a deep awareness of the ecological folly our society was engaged in was brewing. It was a draught I and many others had begun in the late 60s to sip at. On the eve of my fellowship I began to learn about the seamier sides of agribusiness and the political economy of food, of pharmaceutical medicine and acupuncture and other forms of non-Western healing, as well as absorbing

aspects of "youth culture" into my New Left persona as an activist and organizer.

Our society's destructive impact on the natural world sat heavy in my 1970 basket of anxieties, there with nuclear (for starters) war and the endemic racism pervading our institutions and culture, the foci of my political work during the 60s.

So Blake's wrong-headed assessment of Newton tripped a flood of realizations: Newton-as-mechanist, the faux Newton we all learn in our philosophy and physics and mathematics and ethics and, indeed, all the subjects influenced by science-- which is to say, by now, all subjects that Newton was essential to the success of the enterprise, absolutely central to the rise of capitalism in 16th and 17th century England, to bring nature under a totalizing control, in a word (or two) to reduce Gaia or Mother Earth merely to "resources."

At the beginning of the transition to a capitalist (hence, resource-devouring) economy, the world was nearly universally understood as alive, the Earth a living being. But once that transition was well underway (say, 1700) the matter of the cosmos was increasingly depicted in sermons as well as published scientific treatises (including the *Principia*) as "inert," mere hard lumps of "brute matter." This is Newton's alleged legacy.

But I knew Newton believed otherwise. And in a flash I now saw the key to the puzzle that had long intrigued historians, the rise of Western science in the same social crucible, 17th century England, that simultaneously was birthing capitalism and that had exploded in the first modern revolution in European history (the English Civil War of 1642 set the mold for the 1776, 1789, 1848, 1870, and 1917 rebellions and revolutions). Nature as inert, as essentially dead matter, was a key ideological new teaching that enabled, indeed, justified, the wholesale assault on the natural world at the sorry root of capitalism.

That teaching of the new science had buried earlier, more nature-friendly comprehensions that had been critically important in the early phase of the scientific revolution. By around 1700 had

been effectively suppressed.

I realized in 1970 that I would have to tell this story. For I believed it offered a critical understanding, a new scaffolding to help frame a deeper comprehension of our ecological fix by revealing the process by which people were rendered capable of carrying out the unconscionable assaults on the natural world these past five or more centuries. A conscious redefining of the natural world was crafted and taught in schools and popular magazines, in what amounted to a successful effort to get people to view the natural world as an "object" on which to impose our (profitable) wills. Though similar conceptual models for scientific theories were developed across Europe, it came to its fullest realization in the England that emerged after nearly two decades of rebellion, war, and revolution, with the monarchy, Church of England, and the House of Lords (all of which had been abolished during the rebellion, the first by the beheading of Charles I) restored in 1660 as Newton prepared to go to Cambridge.

I realized it would be a difficult tale to tell, since anything and everything were affected profoundly by the universe-as-machine teaching. There would be far too much for me to investigate, to master, so that an adequate accounting might well take me decades.

Along the way I have told this story in lectures and scholarly lectures and scholarly articles, in underground mimeos and mailings and an unpublished novel, and in a long treatise now at a publisher. The assembled four articles here represent my clearest, most accessible telling of this fascinating story, an abridgement and less technical version of the historical kernel of a longer treatise, *Marxism & Witchcraft*, where the multitude of ramifications of this key ideological role played by the new science are explored in loving detail, including the myriad of considerations for a 21st century movement for environmental justice.

These articles first appeared from 2000 to 2004 in issues of Reclaiming Quarterly, a journal of witchcraft and magical activism.

The fate of nature in the scientific revolution

Dead on Arrival

by David Kubrin

THE ROLE OF SCIENCE in Western thought since the 17th century, as a model of the use of reason and the need to marshal evidence to establish certain knowledge, has been recounted in many studies and is a central theme in a number of history books.

Other works have focused on the possible relationship between the new science and the later onset in England of the Industrial Revolution.

Considerably less attention has been paid to a deeper, more significant role played by early modern science: how it functioned ideologically, teaching people to view the world in particular ways so as to foster certain values and denigrate others. I want to focus on how Western science served to sanction an altogether new, predatory approach to the natural world in early modern times.

The early modern period of English and European history is remarkable for its extraordinary range of new institutions, practices, and ideas: 1) the colonial subjugation of the “New World” as well as parts of Asia and Africa; 2) a vast expansion in the trafficking in slaves; 3) the Protestant Reformation; 4) the European campaign to wipe out Witchcraft (“Burning Times”); 5) the formation of the first nation-states; 6) the first appearance of the nuclei of capitalism (in textile manufacturing and farming, for example); 7) the beginnings of industrial forms of production in key sectors of the economy (textiles, again, and mining); 8) an economy relying on extractive processes — such as

deforestation, plantation agriculture, and mining — so that the scale of the taking from nature expanded enormously; and 9) the scientific revolution.

It is these last two changes, the

spread of deep extractive processes and the scientific revolution, and their profound connections to each other, that interest us here. Such a tremendous transformation in peoples’ practices in relation to nature would have been unthinkable unless similarly vast shifts were occurring in their consciousness. Digging shafts of two to three hundred feet into the hills and vales, in order to mine silver or coal, would not have been easy in a society in which nature was seen, as it was nearly everywhere in earlier times, as alive.

“Mother Nature” was more than just a familiarizing term. It conveyed a complex system of beliefs and implied a set of values in relation to the landscape, which was seen literally as the embodiment of a sacred presence. Certain springs, trees, caves, and rock outcroppings were experienced as particularly holy and were used for healing or fertility rituals. The cosmos as a whole possessed a world soul, or *anima mundi*, which at times would reflect sentience, purpose, or consciousness.

From a nature such as this, one simply did not take at will. Because a sense of balance had to be respected, offerings were given in return for the ore, food, or herbs removed from the fields, mountainside, or forest, so as to maintain that sense of reciprocity. Rituals were held to mark the beginnings and ends of the planting cycles or hunts, and also when a mine was begun or a new shaft sunk.



For peasant farming communities, working from centuries of evolving tradition rather than “book learning,” the Earth remained a living body...

As late as 1600, belief in a world that was alive was universal. Within a century that was no longer the case. Among the educated classes and those influenced by them (through sermons, pamphlets, etc.), belief in a nature that was fundamentally dead became the dominant view. These changes can be traced to the kinds of transformations occurring in the political economy of early modern Europe.

A respect for the sacred nature of the landscape became a noxious obstacle in a society intent on taking as much as could be physically had from nature's bounty. Aside from considerations of the availability of labor power, difficulties in transportation to markets, and the number of potential buyers, in this new society no other

"factors" could be allowed to interfere with either production or profits. In retrospect, what had been a sacred landscape was in the process of being transformed into a set of "natural resources."

Nature-as-Mother had another worrisome association in early modern Europe. The animistic basis of a living nature had always been the philosophical underpinning for magic. From the Renaissance (c. 1400) on, there had been a substantial and problematic rise in magical belief. The magical roots of Roman Catholic practices and doctrines were a major reason for the attacks by the Protestant Reformation. Nonetheless, popular magic was widely practiced, both in the villages and by the nobility and educated classes.

THE WIDESPREAD social tensions, including the many dislocations, economic instabilities (rising rents, years of bad harvest, enclosures of common lands, etc.), growing landlessness among the peasantry, peasant uprisings, the Reformation and Counter-Reformation,

widespread religious warfare, and the various other transformations and upheavals of early modern times led to an actual Civil War and revolution in England. This lasted from 1642 until 1653. Then Oliver Cromwell took power as Lord Protector, replacing the monarchy, which was cut down with the revolutionary execution of Charles I in



...while for the educated elite, nature was becoming dead matter subject to human manipulation and exploitation.

1649.

The Civil War appeared to pit Parliament against the Crown. But a number of truly radical groups, some on the fringes of power and composed for the most part of journeymen and apprentices, pushed for changes so revolutionary that they greatly alarmed the propertied classes represented by both the royalists and Parliament. These more radical groups, many holding to an absolute egalitarianism ("leveling") that to them was implicit in the Reformation, questioned and defied the most fundamental beliefs and customs. This included notions of private property and of sin (for a number of the radicals, the two were closely connected, if not indeed identical), as well as sexual behavior, the social role of women, and more. Some of the radicals were accused of engaging in group copulation in churches as part of their religious practice.

In contrast to the other Protestant churches, members of these radical groups believed that nature was alive. God was to be found *in* nature, in

matter itself. For example, the leader of the Diggers, Gerrard Winstanley (who led a group to farm collectively on St. George's Hill on the outskirts of London on April 1, 1649, arguing that "the earth should be made a common treasury of livelihood to whole mankind, without respect of person") claimed that the only preachers needed were the many things

and creatures that had been created [See RQ#71].

Among these radical groups, the practice of magic was common. In fact, during the decade that followed the defeat of the Crown, there was an outpouring of works on astrology, Paracelsianism, and other mystical chemical or alchemical works,

as well as the first English translations of Rosicrucian texts. Oxford and Cambridge universities came under pressure to teach courses on astrology and alchemy during this period.

AS MAGIC EMERGED as the spiritual framework for the dispossessed and more radical combatants in the Civil War and revolution, powerful voices in England realized that neither magic nor the notion of a living nature could any longer be tolerated. Beginning a few years after the execution of Charles I in England — and a decade or more previously on the Continent, where the radical challenge had come to the surface earlier — impassioned attacks on magic suddenly appeared in sermons and pamphlets. These condemnations, which continued after the Restoration of the English monarchy in 1660, mocked the pretenses of the many followers of magic. Radicals were labelled as "enthusiasts," literally meaning "filled with god," or as "Rosicrucians." John Wilkins, who after the Restoration of the

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Crown was a leading figure in the formation of the seminal scientific research institution, the Royal Society, wrote in 1646 that the enthusiasts had recently been “much cryed up and followed... [but] in the opinion of many sober and judicious men, [the enthusiasts] deliver only a kind of cabalistical or Chymical, Rosecrucian Theologie, darkening wisdom with words, [and] heaping together a farrago of obscure affected expressions and Wild allegories.”

Seth Ward, another figure important in post-Restoration scientific and mathematical circles, condemned the “canting Discourses... of the Rosicrucians.” The Restoration bishop, Samuel Parker, claimed that Rosicrucianism led its followers to “the wildest and most *Enthusiastical Fanaticisme*.” Anthony á Wood, the chronicler of Oxford University’s history, charged that those who professed to having visions, revelations, and the like, were really “aiming at an utter subversion of the Universities, churches, and schools.” Accusations such as these were repeated and amplified in treatises, sermons, and pamphlets by Robert Boyle, Joseph Glanvill, Ralph Cudworth, Isaac Barrow, Simon Patrick, Walter Charleton, Christopher Wren, and other Englishmen. The sheer volume of such attacks readily supports P.M. Rattansi’s observation that “the natural magic tradition attained unprecedented influence and attention... during the Puritan Revolution,” as well as demonstrating that a focused reaction against that widespread magical radicalism had very much become a priority in influential circles.

It is illuminating to look at some of the specific charges raised against the enthusiasts by a widely read Cambridge critic, Henry More, a man whose ideas significantly influenced Isaac Newton. (Newton was a student at Cambridge, where More taught, right after the Restoration.) According to More’s *Enthusiasmus Triumphatus* (1656), the

philosophical roots of Enthusiasm can be found in alchemy. He singled out Paracelsus and his followers for attack, charging that their philosophy was the basis of pagan beliefs and claiming that they professed to meet “God in every object of their senses.” Alchemists mistakenly held, according to More, “That Nature is the Body of God...” As one of More’s counterparts in France had observed earlier in the century, in attributing power to mere matter itself, alchemy undercut the power of God and threatened to become “the sole religion of mankind.”



Henry More warned in *Enthusiasmus Triumphatus* of those who suffered from an “enormous strength and vigor of the *Imagination*.” The problem was that, in an era of peasant uprisings, popular rebellions, and enthusiastic frenzies by masses of people, the imagination was subversive. It was the *magi*, using *images* in their words or talismans, who taught how to make the *imagination* manifest. Hence the campaign to rein in the imagination set off an assault against magic.

THE REACTION AGAINST magic and imagination was itself part of a profound cultural war, dominating the middle decades of the 17th century, that aimed at a thorough transformation in the key areas of *language*, *music* (theory and performance), and *science*. Overall, the effect, as the sociologist Max Weber has said, was to dis-enchant the world.

In language, the campaign aimed at imposing a more direct and plain style, abandoning altogether figurative images, rhetorical devices, or rhythm, which were all seen as props whose only purpose could be to mask the truth. Serious attempts were made to formulate the language so as to make all ambiguity impossible: a single word would be used to denote any one thing

and each word would have but a single meaning. No one would be able to use words that referred to purely imaginary things, such as fairies. Such a campaign, besides being both laughable *and* scary, led to a scientific makeover of the language that greatly afflicted written and spoken discourse in the second half of the century, as is readily seen by

comparing the nature of English writing before this campaign (Shakespeare, John Donne, and John Milton, for example) with what came after (Jonathan Swift, John Dryden, or Alexander Pope).

In music, the campaign aimed at making impassable what had been easily accessible musical paths to ecstasy. This was achieved through a new theory of harmony and the “tempering” of the scales, as well as new rules for using bows with string instruments and the proper use of ornamentation, etc. As Marin Mersenne, a French cleric and the major exponent of this musical reform, explained, the proper role of the musician was “to restrain the passions.” Having perceived a direct line between states of ecstasy and insurrection in the uprisings in England and elsewhere during the 17th century, Mersenne’s reforms were to act as formidable barriers, standing in the way of ecstatic possession.

At the same time, in science a sudden wall arose separating newer, machine-like explanations for natural phenomena from animist concepts that had been an important part of the scientific lexicon during the earlier phase of the scientific revolution. This remarkable outpouring of new comprehensions of nature and mathematics by natural philosophers such as Gallileo, Kepler, Descartes, William Harvey, and especially Isaac Newton — what has been called the 17th century scientific revolution — reinterpreted what was real. The newer, machine-like theories were critical in this shift and in establishing, in the final analysis, the “death of nature.” In the course of the 17th century, the inert nature of all matter had been enunciated

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Tide's bonfire. Look for someone wearing or holding ribbons. Bring wood and finger food to share around the campfire. This will be priestessed but semi-spontaneous and laid back. Donations are always welcome.

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History: Dead on Arrival

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with increasing clarity and emphasis by successive scientists until it became firmly established as the first of Isaac Newton's Three Laws of Motion. By itself, matter is utterly passive, capable of acting only if it is acted upon. (Hence the analysis was in terms of forces, the primary actors in his grand treatise, the *Principia* [1687]). Once in motion (straight line, constant speed), bodies continued in motion, unless a force acted to stop them; if at rest, bodies stayed at rest unless forces acted to make them move. As a result, emphasis shifted to explaining not motion, but changes in motion. In this way, according to what was called the "mechanical philosophy," all causation had to come from outside a body. And bodies were thereby axiomatized as being passive entities, mere objects.

It is not clear to what extent the philosophers who insisted on the replacement of animist worldview with a mechanized one were conscious of the economic and political need for a natural world drained of all animus, or soul, to serve the prerogatives of industries like mining or practices like deforestation. The change was probably made unconsciously, mediated by a multitude of considerations,

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History: Dead on Arrival

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hesitations, and layers that disconnected machine metaphors from processes of extraction of metals or wood from the natural world. No matter, the end result is the same. The world, by definition, was now conceived of as dead. And it is hard to mourn the death — this the rulers must have known — of what is, by fiat, already dead.

It is clear that other, political and religious, motivation for de-spiriting the world, the need to render people passive, was conscious. After the upheavals and insurgencies of the previous decades, it was painfully obvious which notions encouraged subversion and which ensured passive subjects. It was the latter that were now socially mandated and were achieved by undermining the processes by which they had been led to enthusiastic subversion.

However conscious the changes were, from around 1600 to 1700 a profound transformation in consciousness occurred, initially among

the educated classes of Europe and England, but soon spreading, nearly everywhere through pamphlets, sermons, theater, and popular culture. In a nutshell, the new teaching was that nature consisted of dead matter. Through this lesson, a whole different understanding of “reality” was imposed on the population. Any explanations even hinting at an *anima mundi*, a knowing nature, were clearly heretical. Scientists soon learned to guard against expressions that might reveal any such deviations from orthodoxy, at the most perhaps guardedly hinting at them in their private journals or unpublished writings. In fact, to this day, expressions implying nature having purpose or anything other than blind mechanism in natural processes are still considered the unthinkable heresy within science. Nature is entirely to be understood in terms of objects.

Thus was erected a scaffolding of concepts and patterns, regarding the shape of the natural world and the way it was understood to undergo changes, which was used to mold and orthodox “reality.” This new orthodoxy was necessary to bring to birth the systems of nation states and of capitalism that

were then assuming such formidable roles on the stage of early modern history.

There is a profound hidden irony in all of this. The scientist who is given the most credit for the astounding transformation from an animated cosmos, to the mod-

ern machine universe, is Sir Isaac Newton. Yet Newton himself was most emphatic — at least in his private papers — in denying the mechanical nature of the cosmos. He saw both his *Principia* and *Optiks*, the two scientific treatises that both summed up and established the reality of the scientific revolution, as giving but a superficial understanding of how the world worked. The mechanical laws of nature, such as the *Principia* and *Optiks* revealed, merely explained how matter behaves when it is acted upon by external forces. The real aim, which Newton sought primarily through his tireless alchemical researches, both before and after the *Principia*, was to determine those forces that acted in bodies. In his many attempts to explain how such internal forces must operate, the bulk of Newton’s examples were drawn from living creatures, whose generative, digestive, and putrefactive powers gave the lie to the mechanical philosophy’s presumption of matter’s passivity. He suspected the role of light to be central to this inner activity of bodies.

On several occasions — all left unpublished — Newton testified that nature everywhere seemed alive. Thus Sir Isaac Newton’s system of the world, his ideas on movement, light, forces, matter, mathematics, and methods of doing science, was really a carefully crafted negotiation of the allowable spaces reality could occupy, a largely hidden dialectic played back and forth between inner and outer layers of the doctrines in which he believed.

And the Newton seeking the principles that led to activity in the cosmos, who wondered how the motion inevitably lost, due to irregularities in the interactions of bodies, might be restored to the cosmos, who realized that the world could never be simply a blind mechanism, the Newton whose theories were rooted in a magical conception of the cosmos — this Newton was denied to the world for centuries, partially emerging only in recent decades. The Newton who bequeathed us a machine universe was simply too important an icon hanging, as it were, on the gateposts to modernity to be in the least way questioned. But Newton himself chose this understanding of his vision to be the one revealed to the public, sharing his less orthodox views only with the dozen or so young disciples he used to fight for his ideas.

A footnoted version of this article will be posted on the Reclaiming Quarterly website, www.reclaiming.org/newsletter. A future article will look more closely at Newton’s attempts to discover through his alchemy the life in matter.

David Kubrin is the author of “Marxism & Witchcraft,” a treatise on the ecological crisis from which this essay is adapted. He has a doctorate in the history of science, is a middle-school teacher in the San Francisco Unified School District, and has been a longtime political activist.

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Alchemy

by David Kubrin

Animist Subversion in 17th Century Europe

IN A PREVIOUS article (see note below), I recounted the implicit war against nature waged by the worldview at the foundation of the mature scientific revolution, which rendered nature passive, rule-based — and ultimately dead.

This view is found canonically embodied in Sir Isaac Newton's *Principia*, the masterful treatise that explained the workings of the earth, moon, sun, and solar system on the basis of a new quantitative enunciation of his Law of Gravitational Attraction and his three Laws of Motion. The first of these three, the law of inertia, declared that all physical bodies were inert, unable to change unless acted on from outside, by *external forces*.

Although his *Principia* became the basis for what was to be called the "mechanical universe" (the theory that the solar system and the whole of the cosmos are simply elaborate machines following well-defined rules so as to move their separate parts in what amounted to preordained ways), it is significant that Newton did not believe it himself — as I will show in a subsequent article.

Driven to find the secrets of nature's motions and the source of *change* in general, Newton was led inevitably to the doorway of alchemy. He came of age intellectually at a

particularly rich — and problematic — moment in English and European alchemy.

THE ALCHEMICAL QUEST

Before embarking on the story of Newton's remarkable alchemical researches, a more general discussion of the aims of alchemy and of the particular role it played in early modern history will help to establish why its mysteries played such a prominent role in his philosophical program.

The ancient roots of alchemy are obscure, but some forms of it have been found in Egyptian, Chinese, Indian, Jewish, and Arabic traditions. After the Crusades, Arabic alchemy became available in the West in Latin translations. The widespread belief that alchemy is fundamentally a deluded quest to transform "base" metals such as lead into more "noble" ones such as gold through magical hocus-pocus greatly distorts the true nature and aims of the art. While such transmutations were, indeed, a part of the craft, they

were by no means the real goal of the arduous and lengthy labors performed by serious alchemists. Their true aim was primarily spiritual and medicinal.

The alchemists sought a power over creation that would allow him or her (and unlike in Western science, a significant number of the notable alchemists were women) to transmute cruder into more refined matter, a process that can best be understood in terms of healing. This healing was both physical and spiritual. And the transformation of baser metals into the more valuable ones was entirely subsidiary to the transformative powers over sickness, or over the state of one's soul, that this power enabled an adept to wield.

To this end, the alchemist engaged in many of the traditional magical practices: fasting, meditating, chanting, endless repetitive actions — continuous grinding of the reagents, for example, or numerous successive distillations. Through such means, the alchemical adept sought to make something called the Philosophers' Stone, which gave him or her the ability to recreate the world in a manner similar to what had been done by the Creator.

Although the actual production of precious metals was subsidiary to the spiritual and healing aims of alchemy, it was a source of great temptation to princes and royalty eager to acquire the money needed to finance the increased warfare and trade that characterized early modern Europe. Pandering to such needs, many a quack boasted of

RQ and the 1600s

RQ has run several articles about this pivotal period in European history, which saw the eclipsing of older "Pagan" world-views by modern "scientific" ones.

See David Kubrin's prior article, "Dead on Arrival: The Fate of Nature in the Scientific Revolution," in RQ #81, Winter 2001. Also see George Franklin's "The Diggers and the English Revolution," in RQ #71, Summer 1998.

Contact RQ for copies — see back inside cover.

possessing phony alchemical powers; as long as the guise could be maintained room and board could almost be guaranteed. The many fakes served to tarnish the reputation of the alchemical arts. So, too, did a deliberative ploy by the legitimate alchemists to foil the fakers and the money grabbers, as well as to keep their considerable powers from the hands of those who could misuse them. To this end, alchemists wrote their treatises in a symbolic and coded language, making extensive use of mythic elements and purposely leaving out or scrambling critical information that could be transmitted orally. The order of certain laboratory manipulations was also jumbled. Reflecting this purposeful covering-up, our word, "gibberish," comes from Jabir, a leading Arabic alchemist of the Eighth century.

ALCHEMICAL SUBVERSION

The 17th century saw a substantial rise in alchemical philosophy and practice. In part this was a result of the publication, beginning in 1614, of alchemical manifestos by a shadowy group that called itself the Brotherhood of the Rosy Cross. Now believed by historians to have probably existed only through the writings of a German visionary named Johann Valentin Andrae (1586-1654), at the time the Rosicrucians claimed to operate anonymously with the goal of adding to

knowledge so as to increase the fruits of people's labors, to abolish poverty, and especially to improve medicine. Healing by the brotherhood was to be done without accepting any fees.

An outpouring of "a river of printed works" testifies to the tremendous impact of the Rosicrucian manifestos. Many influential philosophers, including initially René Descartes, tried

The spiritual and medicinal treasures from alchemy would undermine the basis of wealth itself though the making of gold at will

unsuccessfully to establish contact with the brotherhood (his biographer claimed it had to be done, if at all, psychically). Their utopian views clearly resonated with many people, unsettled by the onset of modern times, with the seemingly ubiquitous warfare (much of it religious in nature, between Catholics and Protestants); with the development of masses of landless ex-peasants; and with other destructive aspects of the new capitalist social order then unfolding, especially in England and the Netherlands. In this most utopian of centuries, the Rosicrucian program offered a clear vision for how to make a

better, less class-riven world.

At the same time, the Rosicrucian program planted a deep fear in the hearts of many powerful religious and political figures. Rosicrucianism was seen as promising salvation without Christ — thus setting up a kind of alternative religion to Christianity. Unlike Christianity, where the world of matter was seen as detracting from the far more important spiritual world, Rosicrucian practice focused, through alchemy, on the material world. Salvation was thus sought through matter. Magic and alchemy were central in Rosicrucian doctrine for attaining salvation.

One of their critics claimed that the Rosicrucians were devil worshippers. Francois Gafusse, a Jesuit, wrote that the Rosicrucians were "really wicked sorcerers, dangerous to religion and the State."¹

Political authorities in many countries worried about the subversive implications of Rosicrucian ideology. Within a few years of the initial publication of Rosicrucianism's several manifestos, a series of blistering attacks on its "pernicious" doctrines were published. Most significantly, the clear danger perceived in the Rosicrucian program set in motion a philosophical movement to undermine its magic — indeed, all magic — a movement that created the outlines of modern philosophy.

THE MECHANICAL PHILOSOPHY

This anti-Rosicrucian movement was begun in the early 17th century by Marin Mersenne and Pierre Gassendi, both French Minorite friars; an older and more disillusioned René Descartes (carrying a mandate from Rome to battle this dangerous impiety); and Thomas Hobbes, the English philosopher.

Called the "mechanical philosophy," their program represented *continued on page 58*

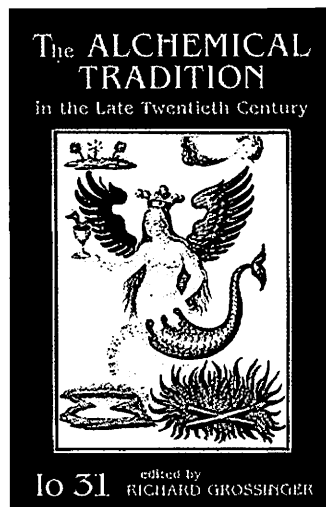
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continued from previous page

her own eyes, and hear with her own ears.”

According to some longtime practitioners, the swallow response is suppressed when people are deep in trance. So it is good to get the person to eat or drink something. Some people like to be touched or massaged. Have the priestess perform some mundane physical task, or use her hands. It is good to give people familiar objects to hold, such as their own jewelry. I like to ask people to answer three questions about mundane things, such as to name three things in their medicine cabinet.

Asking the person to say their name is a way to check on them. Any hesitation is a good indicator of not being all the way back.

Some people don't like to have a lot of personal attention afterward, so they may say they're fine in an attempt to get their tender to back off. It's the job of the tender to give them the space they need, and still stick with them until they're really convinced the person capable of functioning normally again. (It's always risky to let someone drive a car after aspecting!)

Aspecting is not work for everyone. Some people may not want to do it, and some may never be able to let go enough to do it. But it is a valuable magical tool. I like the work, and intend to continue exploring it, with my own cautious style. When approached with a commitment to our spiritual paths, it can be a rich experience.

Robin LaSirena teaches Reclaiming classes in the Bay Area, directed the chorus for the Spiral Dance for several years, sings locally, and acts with Magical Acts Ritual Theater Group.

Aspecting: Inviting Divine

continued from page 18

these days?” In order to let someone else use our bodies we must first truly know who we are and know how to get in and out of our own bodies. Aspecting is not a party trick.

As with most things in Witchcraft, we must be able to take aspecting with a grain of salt. When receiving words from an aspect, use your intuition. Even if you are in the presence of a Master Aspector whom you trust, don't take in everything without question. Not all Mysterious Ones are our friends. Aspecting can be used like a drug, inducing an effect similar to drunkenness. It can also be over-used. We did that at Witchcamp for a while when we first started using it. We wanted to aspect absolutely everything. One time I remember aspecting the Garden of Eden.

Done well, aspecting can change all those involved. Being in the presence of divinity can be felt in the body, a feeling of grace filling you. You become more than you had known yourself to be. Your own presence becomes more full, and the aspect reveals to you a larger sense of your authentic self. After the aspect has gone, you feel in a deeper way the divinity of all things around you.

At its best aspecting is a kind of mini-enlightenment and a cultural exchange. You have been changed and so has the Mysterious One who came for a visit.

Pomegranate Doyle is an artist, homemaker, Witch, priestess, and a senior teacher in the Reclaiming Evolution of Witchcraft.

Aspecting in Reclaiming

continued from page 20

therefore interferes with other participants' direct contact with the sacred.

This is not a problem that I've experienced. I've certainly seen disappointing aspecting which feels like self-indulgence or ego tripping, but I've also been blessed with powerful and transformative experiences in ritual, times I have felt the presence of the Goddess in ways I'd never imagined possible — because a priestess was aspecting Her.

I think the key as a ritual participant is that I never give up my personal authority or discernment. I never surrender my personal connection to the sacred, no matter what the ritual planners or facilitators choose to do.

Sage teaches workshops and Witchcamps throughout Canada and the United States. Her current magic revolves around trees, the family and the alchemy of star and earth.

Alchemy in the 17th Century

continued from page 27

a frontal assault on all the assumptions that underlay occult thinking, especially alchemical philosophy. The cosmos was re-conceptualized as consisting entirely of “matter and motion.” This vision would be the one embodied in the later decades of the scientific revolution (see “Dead on Arrival,” reference below.)

According to the historian Frances Yates, Rosicrucianism actually gained a rather short-lived foothold in the late 1610s in the newly-established court of the German Prince Frederick V, the Elector Palatine, who had recently married Elizabeth, the daughter of James I of England. The death in 1612, at a critical time in the ongoing struggle between Catholic and Protestant powers, of the Holy Roman Emperor Rudolf II (who had extensive magical and alchemical interests) meant a new emperor would be chosen. The Archduke Ferdinand of Styria, the likely successor, was a man known for his efforts to enforce religious orthodoxy. In 1617 he was crowned King of Bohemia, a longtime center of religious toleration, radical philosophy, science, and the magical arts. His crowning was a major step toward acquiring the imperial crown, but his immediate move to stamp out “heresy” in Prague led to rebellion.

The Bohemians moved to invite Frederick V, strongly identified with the Protestant cause, to replace Ferdinand as King of Bohemia. Frederick V accepted their offer of the crown, and he and Elizabeth, along with their newborn son, Prince Henry, journeyed late in 1619 to Bohemia,

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a move widely seen at the time, according to Yates, as the virtual completion of the Reformation, embodying mythic themes and epic proportions.

The Catholic reaction was immediate. Armies massed to crush this challenge to Catholic and Hapsburg power. Frederick's defense relied on an army led by Christian of Anhalt, a man closely identified with occult interests. His troops, however, were no match for those of the Catholics. The Protestant forces were wiped out. Mass executions suppressed all resistance.

The enormous victory of the Hapsburgs in November, 1620, has been seen by some historians as the true start of the Thirty Years' War that would devastate Central Europe in the following decades. Beneath this political and military warfare, according to Yates, lay a critically important spiritual war. Yates points out that the publication of the original Rosicrucian manifestos in 1614 followed by one year the apparent political alliance between the Palatinate and England in defense of what were seen as Protestant liberties. The vision of a new utopia and Frederick V's road to power in the radical center of Europe — Prague — were linked.

This is why the torrent of Rosicrucian

literature (more than 200 works between 1614 and 1623) virtually ceased not long after Frederick V's resounding defeat. Yates further maintains that the defeat — and the subsequent intensified campaign to discredit Rosicrucianism — may well have been the catalyst for what became (in the words of H.R. Trevor-Roper) "the worst of all Witch persecutions, the climax of the European craze" — what we call "The Burning Times."

Utterly defeated in Bohemia, Rosicrucianism went underground and appears to have moved west. Three years after the rout of Frederick V's forces, placards announcing the arrival of the Rosicrucian brotherhood appeared in France, eliciting new alarms about the alleged "political insubordination or sedition" by these fearful "devil

worshippers" so "dangerous to religion and the state."

Though it was many years before the actual publication of the key treatises of Merenne, Gassendi, Descartes, and Hobbes, it was the 1623 announcement that planted the seed of philosophical panic deep in the soil of French consciousness — a seed that would eventually blossom as the mechanical philosophy.

continued on next page

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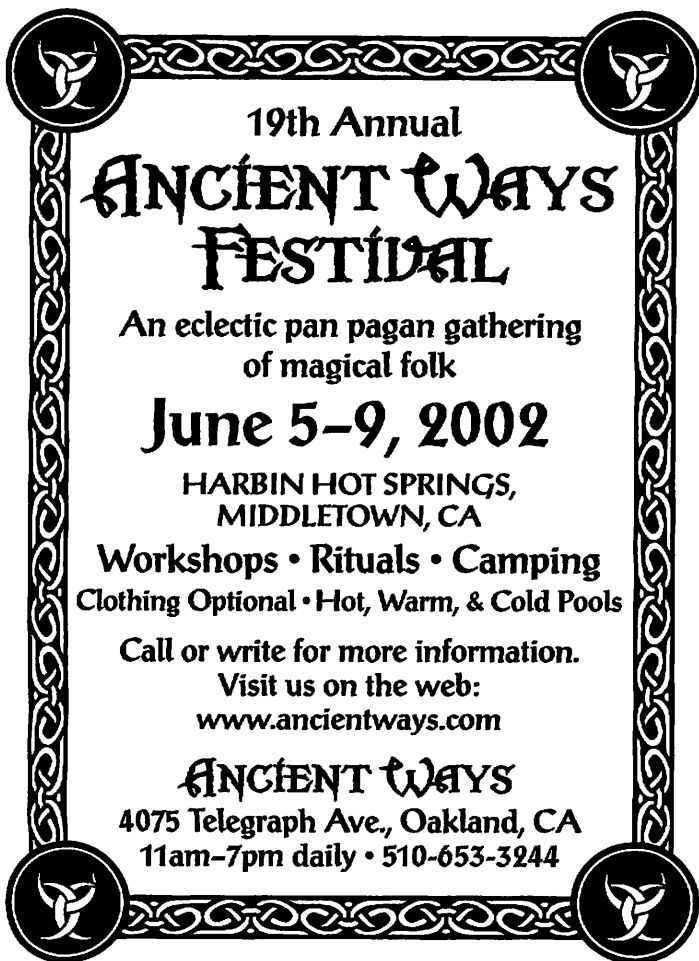
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ENGLISH RADICALISM

With such strong opposition, Rosicrucianism was unable to establish much of a presence in France. Across the English channel, however, a new opportunity arose some two decades later. This was the outbreak of the English Civil War and revolution, beginning in the early 1640s. (See RQ #71 for background on the revolutionary 1640s.)

The breakdown of royal, Parliamentary, and Church (of England) authority in 1642 allowed the publication of all manner of works that previously would have met with a censor's ban. As the Civil War deepened, more radical groups emerged to reframe the political, social, economic, and religious questions that divided the country. Socially marginal, some of these radical forces were able — for a time at least — to be politically central. Tensions between the army and Parliament, reflecting different social bases and frequently antagonistic religious programs, repeatedly surfaced in the late 1640s, especially as the question arose as to what to do with the now-defeated King, Charles I.²

For the purposes of this essay, what concerns us most is the vision of God held by a great many of the radical groups in the English Civil War era, for it resembles what a few

decades later would be called "pantheism." To these people, their god, for the most part, was *in* nature, a part of the world. Or, as one Anglican bishop commented about one of the small sects that managed to survive in the 1660s (after the restoration of the monarchy), their descriptions of God implied that (s)he was "such a one, as is not really distinct from the animated and intelligent universe...." Nature, as these people understood it, was alive, as was the matter that constituted the world.

The alchemical program was in deep resonance with the radical left's critique of class and property. Thus, one English alchemist (in what appears to be a 17th century work) explained that he was relating material that most alchemists keep hidden, precisely because the division between rich and poor had ripened to an unprecedented degree:

we judge the time is come to abolish the golden calf, so long had in veneration by all ranks of men, insomuch that worth is estimated by the money a man possesses; and such is the inequality of possessions that mankind are almost reducible to the rich, who are rioting in extravagance, and the poor, who are in extreme want, smarting under the iron hand of oppression. Now the measure of inequity among the

rich hastens to its limit, and the cry of the poor is come before the Lord.³

The spiritual and medicinal treasures from alchemy, the author wrote, will expose the utter vanity of the possessions of the rich, undermining the basis of wealth itself though the making of gold at will.

As reaction set in during the 1650s, to the "extreme" views (and practices) of the radicals, conservative voices made much of the fact that the radical opposition to the Crown came both from working people and from those involved with alchemy. Critic after critic claimed similar associations between radical views, low social status, and alchemical beliefs. (See "Dead on Arrival.")

A central role in the new orthodoxy was to be played by the creation of new forms of natural philosophy. The Royal Society, newly formed at the Restoration, was an eager participant in the creation of the new ideology. Rosicrucianism was singled out as particularly dangerous. A new form of natural philosophy was needed to replace it, to make it impossible for anyone to engage in the kinds of wild theorizing regarding nature or in the seemingly subversive notions about an elite, educated class devoting their energies, as the Rosicrucians had proposed, in healing the sick without pay



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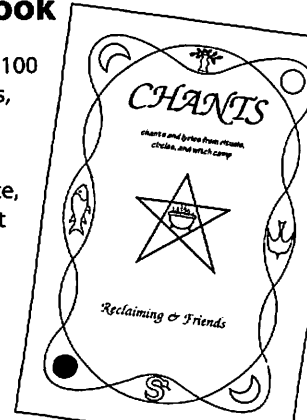
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ment. Fundamental changes in how nature was conceptualized had to be instituted, chief among them the new doctrine of the inertness of all matter. This change, necessitating a withering attack on the very idea of the "wild," was to play a vital role in the ability of capitalism to consolidate a critical foothold in early modern Europe.

AROUND 1670 — two decades before publishing his physics masterpiece Isaac Newton — wrote two essays on alchemy that attempted to clarify the attributes of a proposed "vital agent diffused through everything in the world" — the secret principle underlying all growth, including that of metals and minerals in the body of the Earth. Newton's alchemical researches will be the subject of our next history article.

NOTES

1 - Frances A. Yates, *The Rosicrucian Enlightenment*, Shambhala, 1978 (Boulder, CO), p. 105.

2 - Much as radical groups like SDS and SNCC in the 1960s, despite being numerically insignificant and socially irrelevant, were able to direct the historical currents according to their agendas because they alone had been able to articulate the burning questions that larger

historical forces were bringing to the fore, so too the radical forces in the English Army and elsewhere were able to make their agenda the one which all of England had to consider.

3. Anonymous, "The Stone of the Philosophers: Embracing the First Matter and the Dual Process for the Vegetable and Metallic Tinctures," in *Collectanea Chemica: Being Certain Select Treatises on Alchemy and Hermetic Medicine*, Kessinger Publishing Company, 1991 (Kila, MT), page 94.

For related material on spirituality and radicalism in the pivotal 17th century, see the author's prior article, "Dead on Arrival: The Fate of Nature in the Scientific Revolution," in RQ #81, Winter 2001. Also see George Franklin's "The Diggers and the English Revolution," in RQ #81.

David Kubrin is the author of "Witchcraft & Marxism," a treatise on the ecological crisis from which this essay is adapted. He has a doctorate in the history of science, is a middle-

school teacher in the San Francisco Unified School District, and is a longtime political activist.

Gwich'in Resist Arctic Drilling

continued from page 13

reasons. They are lobbying Congress to allow them to drill for oil in this sacred place. Since the election of Bush, these companies have redoubled their efforts and gaining confidence in their bid to gain access to the calving grounds.

Opening up the coastal plain of the Arctic
continued on next page



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Isaac Newton and the Lifefulness of Nature

by David Kubrin

AROUND 1670, the 30-year-old Isaac Newton wrote two essays on alchemy to clarify the properties of a “vital spirit diffused through everything in the earth.” This hypothesized vital spirit acted not *on* bodies, but *in* them, in a process Newton likened to the way a seed will act in and on a soil, altering it to the seed’s own nature.

The vital spirit was able to putrefy ordinary matter and reduce it to “chaos” — in other words, to return it to the state of things prior to the Creation. Out of that chaos, as at the Creation, would come generation of a new world, now qualitatively more refined.

This vital agent, Newton firmly believed, was the secret principle underlying all growth, including the growth of metals and minerals in the Earth.

“Newton” — Third of Four Essays on Magic, Politics, and Science

Enshrined as the founder of early modern science (by virtue of his Laws of Motion, theory of gravitation, optical teachings, and co-invention of calculus), Isaac Newton (1642-1727) became known as the father of the “mechanical universe.”

Secretly, however, Newton was an active alchemist — a study whose premise was the lifefulness of the cosmos. The contradiction between the two Newtons, according to David Kubrin’s “Marxism & Witchcraft” (from which this essay was adapted), is central to our present ecological crises.

This is this third of four essays by David Kubrin examining the interplay of magic, science, and culture in the formative years of early modern Europe.

The previous two essays — “Dead On Arrival: The Fate of Nature in the Scientific Revolution” and “Alchemy: Animist Subversion in the Seventeenth Century” — are available online (see end of article).

On a number of occasions, the young Newton likened the Earth to an organism, daily taking in “aethereal breath” so as to replenish its exhausted vital ferments. When first articulated, in the mid-1670s, the theory held that this vital spirit was necessary to feed the planet so as to sustain its life, a conception that stayed with Newton and lay at the heart of his theory of matter. As the substratum for all conceptions of what nature is capable of and in precisely what manner change can occur, the *theory of matter* of a natural philosopher like Newton — Apostle of a new vision of the cosmos — was where the deepest truths were lodged. It was also where Newton’s own certitudes and doubts engaged in near-continuous battle.

When Newton’s theory of matter had received its first semi-public airing, it included this sort of terrestrial “physiology,” with the Earth breathing the vital spirit. Decades later (for the

1713 edition of his grand synthesis of the workings of heaven and Earth, the *Principia*), this physiology was extended to the stars, too, as Newton sketched an alchemical, comet-based cosmogony based on periodic “feedings” of vital spirits, spiraling into their stellar furnaces as the comets’ orbits decayed. Thus he accounted for supernovas, one of which had been visible to Europeans in 1572 and another in 1604.

This vital spirit, or activating agent, remained at the center of Newton’s inquiries for many years. At times he called such agents the “active principles” of nature. During these periods when he thought of the subtler forms of the cosmos as “aethereal,” he suggested that a spirit was present in the aether that “perhaps is the body of light,” since both the aether and light had “prodigious active principle[s], both are perpetual workers.” All things if heated sufficiently, he noted, “may be made to emit light,” which argued for an affinity between light and heat. Both light and the vegetative spirit swiftly penetrate all matter of objects

These affinities would later serve as the basis for Newton’s extravagant theorizing about the nature of the cosmos that were appended to his *Opticks* (1706 and 1717) as his famous “Queries.” There he wrote that since nature “seems delighted with Transmutations... why may not Nature change Bodies into Light, and Light into Bodies?” (*Opticks*, pp. 374-375)

Newton was certain that the place to look most profitably for these vital spirits pervading nature was in alchemy. He was an assiduous student of the secretive craft, reading its numerous extant manuscripts and printed works, copying out whole books and taking voluminous notes from others. For many years he worked to find its secret processes in his laboratory, and left extensive notes of his experiments. He also left remarkable treatises where he synthesized and expanded upon the theories he had read, based on his own research. It is clear that Newton believed that alchemical doctrines were a key to a great many philosophical mysteries.

MYSTERIES OF PHILOSOPHICAL MERCURY

IT WAS NEWTON'S belief that the deepest secrets of nature were to be found at the borderlines between categories, where one entity shades into another. This led to a search for what he, like many 17th century alchemists, believed to be *the* key mediating agent for alchemy: "philosophical mercury."

Different from regular mercury, philosophical mercury is able to dissolve gold and make it "grow."

In a description of this agent's effect on gold, probably written by Newton (or if not, copied by him from a treatise he had read) we read that he had a number of glass containers with philosophical mercury and gold being heated. They "grow in ye forme of trees & by Continued Circulation resolved ye trees into one mercury."

Newton copied that the dissolving of the gold was not the result of a "corrosive" agent, reducing the gold into its atoms, as a mechanical agent would, but of something altogether different in its actions. This was "a mercury so quick as any mercury in ye world. It also makes gold to puffed up to swell with sprigs and branches to Change Colours dayly which sights doe dayly salute me...."

As is true in alchemical literature in general, in Newton's writings a reader frequently encounters this central concern with *living* matter. Thus he wrote of

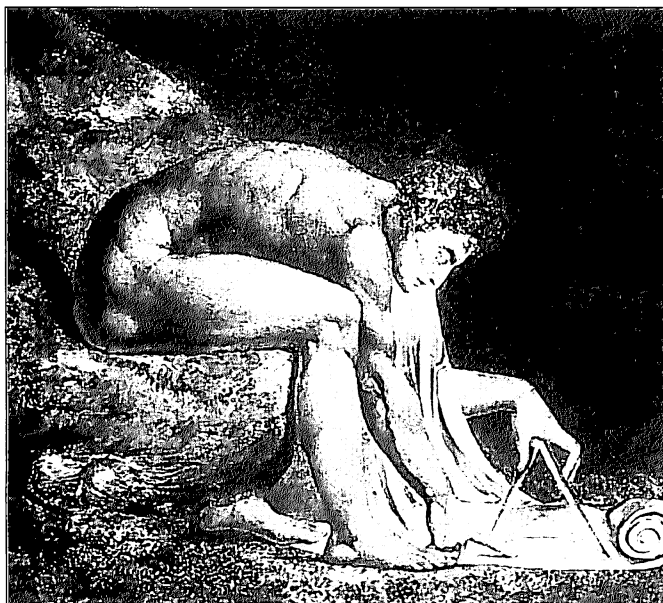


one substance, which had to be taken through a particular process seven times, that it could "endure any heat without losing of life."

BREAKING THEIR OATHS

IT WAS THE DEATH in December 1691 of Robert Boyle, Newton's friend and elder in the Royal Society and the scientist commonly suggested as responsible for establishing the beginnings of modern chemistry, that provided Newton with an opportunity to intensify his pursuit of this special mercury. In his will, Boyle had named the philosopher John Locke as one of the persons responsible for the disposal of his manuscripts. Boyle, himself an avid alchemical researcher, had in the past given both Newton and Locke (among others) different parts of a treasured alchemical recipe, demanding of them oaths of secrecy. Not long after Boyle's death, Newton wrote to Locke, proposing that Locke and he, despite their oaths, share their respective parts. There was also a "red earth" that Locke

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Newton takes the measure of the universe, by William Blake. Graphics on these pages from www-gap.dcs.st-and.ac.uk/~history/Mathematicians/Newton.html

Isaac Newton and the Lifefulness of Nature

continued from preceding page

had obtained from Boyle, a portion of which Newton desired.

Within several months, Newton had obtained from his friend Locke both a sample of the red earth and the additional part of Boyle's recipe. Newton wrote Locke on several occasions that he was skeptical about the recipe's procedures. Nonetheless, he wanted to try the beginning steps ("the entrance") as soon as the Summer's heat had abated.

Alchemical research had a special urgency for Newton at the time. It had been five years since the publication of his *Principia* and gnawing questions about the nature of the mysterious force of gravity at its heart, so alien to the tenets of the recently dominant "mechanical philosophy," had seriously prejudiced the reception of Newton's great work. What could he possibly mean by this bizarre force called gravity, which acted at a distance — a metaphysical no-no of the first order in a mechanistic world? Newton believed he would resolve this mystery by learning the secrets at the heart of alchemy.

Many months of intense research by Newton followed his receipt of red earth. His amenuensis, Humphrey Newton (no relation), wrote — probably in relation to this period —

that Newton slept very little, especially in the Fall and Spring, going into his laboratory for some six weeks at a stretch, during which "the Fire scarcely [went] out either Night or Day, he sitting up one Night, as I did another, till he had finished his chemical Experiments...." (*Never At Rest*, p. 361)



Newton around the time of his friendship with Fatio de Duillier. Painting by Godfrey Kneller — see page 29.

young Swiss mathematician, Fatio de Duillier, wrote Newton that he feared he was dying. Newton's reaction to Fatio's illness and the series of intimate letters that passed between the two men reveal a deep bond of affection between them. For Newton, aside from his mother, this was the only strong love that he is known to have felt. Whether the two men ever consummated their love is not clear, but the letters leave little doubt that such a possibility was not far from their minds.

Losing Fatio would have been a loss Newton could not have endured. He wrote the younger man, trying to lure him to live in Cambridge. He wrote that the air was healthier than in London where Fatio was staying, a prospect Fatio found attractive "chiefly if it was practicable and proper that I should hire the Chambers which You had next to Yours." Which arrangement, alas, turned out not to be possible, Newton replied.

Fatio's health did gradually improve and by the following Spring he was writing Newton about their mutual researches in alchemy, all the more germane since the younger man had made a new acquaintance who had used his knowledge of the alchemical art to help cure Fatio of his terrible illness. This man knew how to make a most remarkable metallic putrefaction and fermentation, which Fatio described, telling details of its methods of preparation out of mercury ore. "[T]here is plainly a life and a ferment in that composition," Fatio wrote enthusiastically. (He admonished Newton to burn the letter after he had read it, a precaution to ensure its secrets did not fall into the wrong hands.)

AN ATTRACTION THAT KEPT ITS DISTANCE

WHILE APPARENTLY engaged in his trial with Boyle's recipe, Newton received what appeared to be grievous news. A

Now that his immanent death was no longer an issue, Fatio's subsequent letters to Newton, still flirtatious, turned to his worries about his financial future. An inheritance he had expected upon his mother's death turned out to be smaller than he had hoped for. But his new alchemical benefactor had offered to teach Fatio how to prepare some of the remarkable medicines he knew. Fatio had hopes of using that knowledge to heal many people and so — in notable contradiction to the older, Rosicrucian code of healers not charging fees — “to raise a fortune by it.” (Newton, *Corr. III*, p. 269) He also suggested that Newton might wish to come to London to learn more about this remarkable mercury he had been describing so enthusiastically.

We know that soon after this invitation, at term's end in May 1693, Newton signed out of Cambridge. Exactly how long he was away is uncertain, for the surviving documents are contradictory, and we have no records directly telling us where he went or what he did. However, we may safely assume that he went to London in response to Fatio's tantalizing hints.

NEWTON'S TRANSMUTATIONS

HE WOULD HAVE GONE to London presumably to see and engage with Fatio for the first time since the crisis of his illness, and perhaps more significantly, for the first time since the arrival of Fatio's new healer, alchemical teacher, and special friend. While little direct evidence exists, several highly unusual and emblematic changes occurred in Newton in the aftermath of this presumed short visit.

• First, after more than nine months of correspondence reflecting a mutual yearning between Newton and Fatio, all contact between the two men abruptly ended. No letters, visits, meetings, until years afterward, and then only briefly for business or technical matters.

• Second, shortly after this visit, Newton was clearly in the grip of a

devastating nervous breakdown that drained him spiritually and left him unable to function for perhaps a year.

• Third, emerging from this crisis, Newton adopted a *persona* in direct opposition to who he had been and what he had stood for prior to that breakdown. The shy academic recluse moved to London with its unhealthy air and became a very public Administrator of Science, autocratic in his dealings with other scientists and public officials. As Master of the Mint, he had life and death power over the counterfeiters and debasers of Their Majesties' coinage, whom he relentlessly pursued with the help of police and informers working for him.

• Fourth, the former critic of mechanical, “vulgar,” scientific explanations, setting out a new defense of his ideas about attraction against his European critics now began to espouse central tenets of the mechanical philosophy he had previously shunned. He adopted a worldview strikingly at odds with some of his earlier beliefs about the theory of matter.

THE PHILOSOPHERS' STONE REVEALED

MOST REMARKABLY, it was in the same period that Newton wrote his alchemical magnum opus, *Praxis*, a grand summary of his massive reading, painstaking experimenting, and theorizing about the mysterious art.

In the concluding installment of this essay (*Summer 2004 RQ*), we will examine the startling story of a probable alchemical transmutation of a “base”



In middle age, the internationally-renowned Newton was a Member of Parliament. By Enoch Seeman — see page 29.

metal into alchemical gold that Isaac Newton witnessed, and the role that it played in the composition of *Praxis*.

The final essay will also examine Newton as a presumed exponent of mechanism (and presumed foe of magic), especially in relation to the assault on the “resources” of the Earth that formed an essential part of the new capitalist economy in early modern Europe.

The previous two essays — “*Dead On Arrival: The Fate of Nature in the Scientific Revolution*” (RQ #81, Winter 2001) and “*Alchemy: Animist Subversion in the Seventeenth Century*” (RQ #86, Spring 2002) are available online — see www.reclaiming.org/newsletter/backissues.html

The concluding installment will appear in our Summer issue.

David Kubrin is the author of “*Marxism and Witchcraft*,” a treatise on the ecological crisis, from which this essay is excerpted. David has a doctorate in the history of science, teaches middle school in the San Francisco Unified School District, and is a longtime political activist.

Alchemical versus Capitalist Gold in the World of Isaac Newton

The Ideological Assassination of Nature

by David Kubrin

In this, the fourth and final essay on Isaac Newton's alchemy, its fundamental role in the crisis of early modern Europe, and in particular our contemporary ecological crisis, David Kubrin focuses on the crucial decade that followed Newton's nervous breakdown in 1693, six years after he published his magnum opus on physics, the Principia.

The previous essays are available online — see end of article.

NEWTON AND THE ALCHEMICAL TRANSMUTATION

DID NEWTON participate in the alchemical transmutation of lead into gold?

As I pointed out in the first of these essays, the dual crises of early modern Europe, and of Isaac Newton, who has served as an icon of the vast transformations of the world that occurred as the modern age began in the later seventeenth century, were intimately entangled. Understanding how the intertwining occurred is particularly important since the constellation of modernity — including the developments of nation states, capitalism, the European conquest of vast areas of the world, the scientific revolution, and especially the explosive expansion in extractive industries — first emerged in this period.

Newton's famed nervous breakdown (see last issue), in turn, took place in tandem with several other

puzzling transformative developments in his life: first, the abrupt ending of an especially close relationship (his only one, aside from his mother) with a young disciple, Fatio de Duillier, a fellow alchemist and mathematician and a man Newton planned to have edit the crucial second edition of the *Principia*, where Newton could answer his many critics; second, Newton, the formerly withdrawn Cambridge philosopher, moving to the London he formerly detested and becoming a very public politician, royal appointee, and scientific administrator; and third, his accepting of philosophical tenets from mechanical philosophy about the central issue of the nature of matter — theories he had formerly firmly rejected.

Most remarkably, it was in this period of a few years that Newton wrote his astounding alchemical treatise, *Praxis*, a grand synthesis and summary of his massive reading, painstaking experimenting, and theorizing about the mysterious art. Quite astonishingly, though his theory of matter had recently moved somewhat in the direction of

orthodoxy, in *Praxis* Newton clearly describes making the “Philosophers’ Stone.” We may speculate that this was based on laboratory experiments he had done with Fatio and Fatio’s new alchemical mentor during the fateful visit of June, 1693 (see last issue). Near the end of *Praxis*, Newton wrote:

“Thus you may multiply each stone 4 times & no more for they will then become oyles shining in the dark & fit for magical uses. You may ferment it with gold by keeping them in fusion for a day, & then project upon metals. This is the multiplication in quality. You may multiply it in quantity by the mercuries of which you made it at first amalgaming the stone with the

mercury of 3 or more eagles & adding their weight of the water, & if you designe it for mettalls you may melt every time 3 parts of gold with one of the stone. Every multiplication will encrease its vertue ten times & if you use the mercury of the 2d or 3d rotation without the spirit, perhaps a thousand times. Thus you may multiply to infinity.”

Was Newton, as the passage clearly suggests, a participant in the legendary
continued on next page



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transmutation of lead into gold? How can that be?

To answer that provocative question, let us look a little more closely at the process of Newton's nervous breakdown and subsequent changes in his life. For most historians, these phenomena — Newton's nervous breakdown, the sudden severing of all ties with Fatio, modifications of his theory of matter, and most strikingly his report of the making of the alchemical Philosophers' Stone — remain deep, inexplicable, and quite disconnected mysteries.

Let me suggest a single coherent narrative, revealing connections between four of these enigmatic changes.

Presumably Newton's visit to Fatio and his alchemist friend provided the basis for Newton's extravagant claims in *Praxis*. I believe the reason Newton reacted to finally finding the Philosophers' Stone by undergoing a nervous breakdown shortly after was that simultaneously he found that Fatio, his beloved, was now enamored of another man, the mysterious alchemical healer who had recently restored Fatio's health and become his new mentor.

Perhaps, we may even speculate, the coupling of Fatio and the other man occurred in the context of the Great Work (as it is called in alchemy) that Newton appears to have witnessed, as described in *Praxis*.

Though the above paragraph is rooted in a fetid swamp of speculation — concerning something as problematic and in as marginal taste as a long-dead man's imagined sex life — it has the distinct virtue of making profoundly sensible several of the remarkable transformations in Newton's life after his brief leave from Cambridge in June 1693. These transformations themselves are firmly anchored in the solid ground of evidence.

Seeing the transmutation that is the final goal of alchemy (more for spiritual than financial reasons) — yet simultaneously losing Fatio to another — unhinged Newton. On his recovery many months later Newton emerged a

very different person, one ready to plunge into the fetid air of London, carrying on Their Majesties' business.

At any rate, in terms of the official version of Newton as a mechanist, the Newton who bequeathed to the world the "clock-work universe," the quotation in *Praxis* regarding making a substance with "magical powers" is nothing short of astounding, akin to the Roman Catholic Pope making a public confession of his ongoing onanism. Though we have no reason to believe that Newton intended to publish his *Praxis*, some trusted persons would have seen it. Newton is telling these selected readers that he has seen (and perhaps helped make) a substance that turns lesser metals into gold on the basis of its magical properties.

ISSUES OF CREDIBILITY

RICHARD WESTFALL, the eminent Newton biographer, warns us that we should ignore Newton's extravagant claims in *Praxis* because of their proximity to his nervous breakdown. I suggest, to the contrary, that those claims be taken seriously, for on that basis we are able to comprehend how, in the context of his tragic loss of Fatio as his beloved — however we may imagine that to have been — those experiences catapulted the older scientist out of his senses.

Significantly, the portion of *Praxis* in which the claims about the Philosophers' Stone are made reads very much like a "how to" laboratory manual, providing specific quantities, times, and sequences — quite different in manner, language, and logic from the more theoretical sections of the work. Additionally, though Newton certainly distorted the meanings of earlier documents in his priority fights with against Leibniz and Robert Hooke (Newton's scientific nemesis), Hooke is the only person who accused Newton of falsified his reporting of phenomena he observed.

A UNIQUE CASE?

I AM CLAIMING, then, that just as his writing implies, Newton was at least a witness to, and likely a participant in,

the making of the Philosophers' Stone and its use to transmute a "lesser" substance into gold. The obvious question is whether such an event has occurred any other time. Or is Newton's, assuming we can believe it, a unique experience?

A discussion of this all-important topic is not possible in the short compass of this article, but we can briefly recount a number of instances that suggest that Newton's claim is not at all unique in the writings of 17th century natural philosophers. There are several other testimonials, some by very reputable sources, that report similar witnessings.

The case of Johannes Helvetius, physician to the King of the Netherlands and a man who had recently published a work critical of alchemy, is especially striking. Helvetius was visited in 1666 by a stranger who, after some general discussion regarding healing, directed their conversation onto alchemical mysteries. He showed Helvetius several gold medals that he said had been made by transmutation, which the physician claimed were "profoundly superior" to any gold he had previously seen. The man also took out a small ivory box containing several lumps the size of small walnuts, capable, he claimed, of great miracles of healing. It was clear that the lumps consisted of the fabled Philosophers' Stone. Secretly purloining a tiny scraping from these lumps as he handled them, the physician waited until the stranger had left and then melted a quantity of lead pipe, casting his fingernail-scraping's worth of the "Philosophers' Stone" into the molten metal. No gold resulted.

When the stranger returned some weeks later, he had apparently obtained permission from his master to give Helvetius a tiny piece of his Stone. After the physician confessed his earlier fruitless attempt with the melted lead, the stranger explained his failure, detailing a critical step Helvetius had left out. The stranger again had to leave, promising on his next visit to show how to use the Stone. But Helvetius' wife, also a student of alchemy, persuaded the

physician to attempt another transmutation immediately. This time he made sure to coat the supposed Stone with wax, as the man had advised. After he had cast it into a small quantity of melted pipe, "there was a hissing sound and a slight effervescence, and after a quarter of an hour I found that the whole mass of lead had been turned into the finest gold."

THE RUNAWAY ASSAYS

AS THE LEADING commercial nation in Europe at the time, the Netherlands possessed goldsmiths and assayers whose great skill and knowledge of their craft can be assumed. This is important to keep in mind as a series of goldsmiths and assayers examined the Helvetius' newly-produced gold. The first, that night, pronounced it to be "the finest gold he had ever seen."

As the purported gold was assayed and re-assayed by master goldsmiths and assayers, a bizarre finding emerged: The first two assays actually found more gold at the *end* of their trials than had been present when they began.

After extensive discussions, those involved concluded that the two increases (one by a full one-third) had resulted from the powers of the Philosophers' Stone not having been fully exhausted in the previous workings. Accordingly it had continued to act on the silver and other metals present in the later trials and transmuted those, too!

News of this rapidly spread. Baruch Spinoza, the philosopher — another skeptic regarding the claims of alchemy — investigated the event, interviewing the various assayers and Helvetius and his wife and writing an account of the event. Neither he nor any subsequent investigator was able to find reasons to

doubt Helvetius' account of the transmutation — until, of course, the late 18th century, when it became obligatory for any "reasonable" person to believe as a matter of *faith* that alchemical transmutation was, in principle, absurd.



Nor is this the only creditable account of transmutation at the time. Robert Boyle, long credited with *disproving* alchemy, actually was a witness to two alchemical transmutations, according to accounts found in his papers — one in 1678 and the other within the next few years. Similar to the medals described in the Helvetius story, scores of other medals and coins, frequently said to have been made after Great Works had been performed at royal courts or at other witnessed events, have been found in scattered museums. Many are accompanied by signed statements as to what occurred, when, and who witnessed it. In at least one instance

where modern chemical analysis has been carried out, the coin was shown to be over 97% pure gold. Yet the near-universal axiom that alchemy is pure bunk, impossible in principle, led the few researchers to have studied these medals to conclude, *without evidence*, that of course fraud must be involved.

In principle, there is simply no possible way that either arguments or data testifying to the reality of the alchemical transmutation *can* be brought forward. Even Richard Westfall, the man who did so much to establish the importance of Newton's alchemical research, has written that he had no interest whatsoever in what alchemists actually *do*. Such disclaimers, it would appear, are necessary in order to retain one's credibility in "serious circles."

CONCLUSIONS I: CAPITALIST VS. ALCHEMICAL GOLD

THOUGH THE 17th century began with a marked intensification of alchemical activity in Europe and England, it ended with alchemical research on the decline, its practitioners in retreat and subject to increasing ridicule, while its theoretical foundations appeared philosophically damaged beyond repair.

It is striking how closely this alchemical ebb and flow was linked to contemporary political and social stirrings, to a parallel waxing and waning of a liberatory, at times even an insurrectionary, temper widely shared among the multitude of the dispossessed — by the new landless and hard-pressed

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Review: Twilight of Empire

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excrete. If we are ever to find creative ways to learn to live together, then seeing the complexity of our lives, the tangled harmonies and dissonances, must be the first goal. *Twilight of Empire* is a welcome guide in that process.

I'm not surprised by the inclusion in the Editor's Note of Lindsay Clarke's quote, "truth is found where contradictions meet."

In review, I offer another Clarke quote, that "the responsibility remains with each of us to bring to our lives the highest degree of

ethical commitment and imaginative energy of which we are capable."

It's a familiar theme in *Reclaiming*, isn't it, the joining of ethical and political life and the imaginative energy we most often manifest as magic? It gives great joy to meet new variations on that theme.

In the end, the form of this book is as striking as, and probably more radical than its content.

I cannot recall ever having experienced ("read" is almost too narrow a word) a book that is at once so holistic and so political. It is entirely engaging. A book of essays alone may

engage the rational mind, but may be escaped by the heart. A book of art alone may engage our spirit, feelings and emotions, but can be dismissed by a busy mind.

There is no escape from this book — it requires attention and response.

From Perceval Press.

Reviewed by

Honeycomb.

Newton and Nature

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rural laborers, by artisans, sailors, vagabonds and squatters, by hired laborers, slaves, apprentices, and heretics.

Let me pause to remind readers of the social, religious, economic, and political turmoil in England during Newton's youth. The uprisings of the English Civil War of the 1640s and the revolutionary ideology and practices of the Levellers, Diggers, Seekers, Family of Love, and other sects represented the breaking of a social and political storm (see RQ #71, *Summer 1998*, and RQ #86, *Spring 2002*). Similar clouds of rebellion had been massing over Italy, France, and parts of Germany and Spain during the early part of the 17th century.

England was unusual in the degree of conflict between the different social classes. The contradictions there led to a deluge. It is in that deluge, with its large number of alchemical activists, that we are able to see more clearly the deeper harmonies between the alchemical project and that of political and social revolution.

This was a period when assaults on common rights in the common fields, woods, marshes, and waterways were intensifying, as had been the case from the late 16th century on. This was the time when nascent capitalism

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revealed its inordinate and spectacular hunger for the minerals, lumber, waters, fauna, etc., of the planet. These ominous developments were resisted by the dispossessed, whose opposition, especially during the insurrectionary decades of the 1640s and 1650s, was associated in the contemporary mind with alchemical ideology.

It was during these decades that a loosely defined, overlapping set of cultural and political ideas were forged, ideas which would continue throughout the succeeding centuries to be put forth and debated, constituting a kind of subterranean, proto-oppositional point of view.

These views are publicly articulated especially in times of great social and political upheaval (as in the later 1770s in the American colonies, France during the revolutionary years of the late 1700s, and sporadically throughout the 19th and 20th centuries in Europe, Russia, Asia, and elsewhere). Advocates scattered across the different classes, races, genders, and nations espoused anti-slavery and anti-property beliefs, heretical forms of Christianity and other spiritual currents and eddies, along with agitation for the rights of women, alternative ideas and forms of sexuality, and organized against a broad range of oppression. The whole of these undercurrents rides on an underlying feeling for some kind of universal human rights for all people everywhere (see Linebaugh and Rediker, *The Many-Headed Hydra*).

Finally, not uncommonly, these notions are found in association with animist beliefs.

However, by the end of the 17th century, especially in England, a few decades after the defeat of the English revolution, a period of profound social and political peace had been established — a product in part of the careful monitoring and control of fairs, coffeehouses, theaters, and all other places or occasions where the mix of social classes raised the potential for subversion. This control was a necessary corollary of the new social and political hegemony of English mercantile capital, in conjunction with the supremacy of the English navy in the Caribbean and the waters around North America, Asia, and Africa, the embodiment of visions of English Empire put forth in Cromwell's time, and earlier during the reign of Elizabeth.

It is my contention that these parallels and resonances between the fortunes of alchemy and those of a liberatory politics reflects a deep kinship, a profound connectivity between the two.

We should realize that what has generally been understood as a *scientific* defeat of alchemy at the end of the 17th century and beginning of the 18th century was, more accurately, a *political* defeat — one ultimately having enormous consequences for the living Earth.

The political defeat hinged on a mechanistic universe that vanquished and replaced a cosmos governed by the *anima mundi*, a soul-filled universe that spoke through the elements of Creation. The concept of the "inert body" upon which mechanism rested was especially instrumental in the consolidation of the new

continued on next page

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power of capital through its ideological construct of a dead substratum for nature. Capital's ability to appropriate wealth and to organize labor ultimately depended on its having a free hand in the treatment of the Earth. The new nation-states and their control of the colonies were built from the forests that were felled, the wetlands drained, meadows destroyed, harbors dredged, whole islands hacked and burned

to establish the multitude of mines, ports, and plantations. For all of these essential activities, capital both needed "resources" and had to rely on a labor force that could be shaken loose from bothersome atavistic feelings about a living Mother Nature, so that there would be no qualms about wielding the tools to transform the landscape, molding it to the astounding shape and texture demanded by these new calculating masters.

As a new process of wealth-production, capital needed to create its own metaphysics to justify itself. It apparently could not co-exist with an alternative view, especially one purporting to allow wealth to be produced "merely" out of craft skills and piety, as alchemy did. Alternative pathways to abundance could not be allowed because they would

inevitably create escape routes for critics of the new order. Policing alchemical activities would be a whole lot easier if the very topic were rendered a laughing matter, the pursuit solely of shady and fraudulent characters.

CONCLUSION II — THE TAMING OF THE WILD

SINCE PURSUIT of resources, which was quickly established as the organizing principle of the new political economy of the 17th century, required imposing order and control over the "wild" places, shovel, pump, and ax — as well as whole armies of laborers — were set to that task, enforcing *regularity* and *development* on wetlands, estuaries, forests, and moors.

These "tamings" succeeded only because they were accompanied by assaults on the "wild" places of the imagination. Attacks on magic were essential to this end, a central pillar of the more general repression against the popular uprisings and seditions of the late 16th and 17th centuries.

It is in this context, of course, that we should view the "Burning Times," a critical part of policing the wild — from the late 15th to the 17th centuries, when an estimated 200,000 people, mostly poor women, were executed as suspected Witches.



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The war on alchemy, in turn, formed an absolutely essential aspect of the wider spiritual warfare, for it was directed against the very possibility of wildness. Its mandate was to prove that matter itself, the "stuff" of the cosmos, was dead.

For in a cosmos made dead — the historical tragicomedy about which these essays have been woven — true wildness would be, by definition, only a chimera.

For the previous installments of David Kubrin's work on the magical and scientific revolutions of early modern Europe, see RQ #81, 86, and RQ #93. These essays are available online at www.ReclaimingQuarterly.org, or send \$10 to RQ for a complete set of the four essays — see page 3 for address.

See also the History sections of RQ #71 ("The Diggers and the English Revolution") and RQ #75 ("The New View of the Burning Times").

David Kubrin's researches into the work on Isaac Newton began with his Cornell university doctoral dissertation in 1968. He has been a longtime political activist, and teaches Science and Math at a San Francisco public middle school, where he is also the shop steward of the United Educators of San Francisco. These essays have been adapted from his manuscript, "Marxism & Witchcraft."

Gimbutas Film

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Hobbesian thesis that "primitive man" was brutish, violent, grasping, and incapable of living in society except under the thumb of a tyrant — and along with it the modern political structures which still assume that humans are naturally vicious and destructive and must be repressed by a strong government and social structure.

Riane Eisler, in *The Chalice and the Blade*, carried these theories further, postulating a veritable golden age of feminism prior to what we usually know as written history. A highlight of *Signs Out of Time*, in fact, is footage of Eisler interviewing Gimbutas, who died before *Signs*

Out of Times was begun.

COMPUTERIZED ARCHAEOLOGY

COVERING THE VAST richness of Gimbutas's thought in one hour is impossible, but the film makes good use of computer-enhanced graphics to convey her theories. Pictures are indeed worth a thousand words, and the ability of film to "morph" and highlight graphics is used to good advantage here.

Maybe the highest compliment I can pay the film is to say that after watching it, I went out and bought Marjia Gimbuta's *Language of the Goddess*, illustrated with hundreds of sketches and photos from her excavations. In the wealth of images that fill this book, Gimbutas's theories come alive, and the language of Old Europe takes shape before our eyes.

Whether we can ever decipher that language as we have Egyptian hieroglyphics or Sumerian script is still an open question. Gimbutas's achievement was to convince at least some scholars and readers that such a language did exist, and is worth our study.

In the end, the film is tantalizingly too short. As I watched the VCR counter tick down, I felt an urgency for more images, more ideas. And most of all, for Gimbutas's vision of a world where the highest

values were peace, justice, and harmony.

If it once existed, it can be reclaimed.

PARALLELS WITH GIMBUTAS'S THEORIES

IN THE Introduction to *Language and the Goddess*, Marija Gimbutas writes:

"Some twenty years ago when I first started to question the meaning of the signs and design patterns that appeared repeatedly on the cult objects and painted pottery of Neolithic Europe, they struck me as being pieces of a giant jigsaw puzzle — two-thirds of which was missing. As I worked at its comple-

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