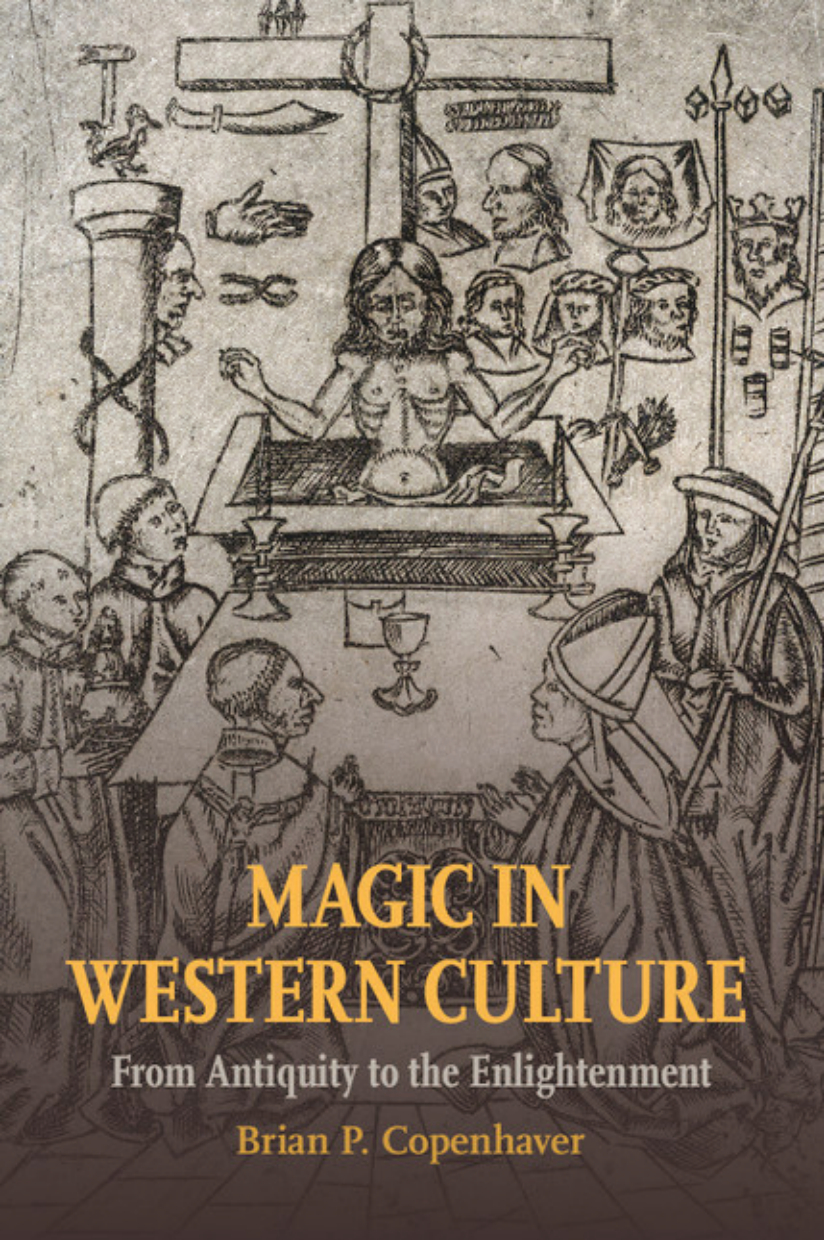

MAGIC IN WESTERN CULTURE

From Antiquity to the Enlightenment

Brian P. Copenhaver

MAGIC IN WESTERN CULTURE

The story of the beliefs and practices called 'magic' starts in ancient Iran, Greece, and Rome, before entering its crucial Christian phase in the Middle Ages. Centering on the Renaissance and Marsilio Ficino – whose work on magic was the most influential account written in pre-modern times – this groundbreaking book treats magic as a classical tradition with foundations that were distinctly philosophical. Besides Ficino, the pre-modern story of magic also features Plotinus, Iamblichus, Proclus, Aquinas, Agrippa, Pomponazzi, Porta, Bruno, Campanella, Descartes, Boyle, Leibniz, and Newton, to name only a few of the prominent thinkers discussed. Because pictures play a key role in the story of magic, the book is richly illustrated.

Brian P. Copenhaver is Distinguished Professor and Udvar-Hazy Chair of Philosophy and History at the University of California, Los Angeles. He is a fellow of the American Academy of Arts and Sciences and past president of the *Journal of the History of Philosophy*; he is also a member of the council of the Istituto Nazionale di Studi sul Rinascimento in Italy. He serves or has served on the boards of *Rinascimento, Renaissance Quarterly, Annals of Science*, the *Journal of the History of Ideas, Early Science and Medicine*, the *International Archives of the History of Ideas*, and the *I Tatti Renaissance Library*. The most recent of his eleven books is Peter of Spain's *Summaries of Logic* (2014, with Calvin Normore and Terry Parsons).

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FROM ANTIQUITY TO THE ENLIGHTENMENT

BRIAN P. COPENHAVER
University of California, Los Angeles

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A MJBA,
IL MAGO MIGLIORE,
DA BPC,
UN APPRENDISTA

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PREFACE

RESEARCH FOR THIS BOOK STARTED IN 1967, WHEN I CHOSE SYMPHORIEN Champier as the subject of my dissertation, which eventually became Copenhaver (1978a): see the bibliography. Over the next forty years or so, I continued to read and write about the 'occultist tradition' mentioned in the title of that book, while changing my views about it. The results can be seen in Copenhaver (1978b), (1984), (1986), (1987a), (1987b), (1988), (1990), (1991), (1992a), (1992b), (1992c), (1993), (1994), (1998), (2000a), (2000b), (2006), (2007c), (2009a), (2010a) and (2010b). All of this has been re-examined, corrected, revised, synthesized, and reorganized to form the core of this book, augmented by completely new material and up-to-date documentation. Because of their narrower content and specialized form, the studies preliminary to this book could not, one by one, sustain its larger claims, which address this question: why did European intellectuals – philosophers especially – repudiate magic in the Enlightenment, after having previously accepted it for more than two millennia?

Mega biblion, mega kakon: an even bigger nuisance, however, would have come from my original plan to include Giovanni Pico's Kabbalah and make the story more complete – though much too long. For now, see Copenhaver (1977), (1980), (1999), (2002a), (2002b), (2007a), (2007a), (2007b), (2011) and (2012). Preparing a companion volume – *Magic and the Dignity of Man: Pico's Oration in Cultural Memory* – constantly reminds me that Pico and Kabbalah, whose place in the current book is small, deserve much larger attention.

Meanwhile, I hope that this book has some virtues of its defects – its scope especially. Since I begin with rumors of a murder in ancient Greece and end with a real murder in today's India, my story can only be selective and episodic, but macro-stories need telling as much as

micro-stories. On the topics discussed, I have tried to be responsive to current scholarship, though not always at the same depth, relying on secondary literature more for some topics than for most: on J. G. Frazer's career, for example, I have not gone far beyond Ackerman's excellent book; likewise for Hanegraaff on Lazzarelli, Perrone Compagni on Pomponazzi, Sturlese on Bruno's *De umbris*, Kahn on the French Rosicrucians, and Newman and Principe on alchemy in England. Also, having read some of the primary texts long before the best current editions were available, I have not always adapted my citations to the new versions: this is true for Bacon and Boyle, for example.

Translations from Greek, Latin, and vernacular languages are mine unless otherwise indicated. Many of the images used in this book are taken from other books, most of them published long ago. Otherwise, for images that require permissions, I am grateful to the British Museum; British Library; Bibliothèque National de France; Pitt Rivers Museum, Oxford; Warburg Institute; J. Paul Getty Museum; Biblioteca Medicea Laurenziana; Biblioteca dell'Accademia dei Lincei; Mary Evans Picture Library; Metropolitan Museum of Art, New York; Koninklijke Bibliothek, The Hague; University of Oslo Library; Museo dell'Opera Metropolitana, Siena; Museo Nazionale Romano, Terme; Oesterreichische Nationalbibliothek, Vienna; Art Institute of Chicago; Bayerische Staatsbibliothek, Munich; Rijksmuseum, Amsterdam.

To friends, critics, and colleagues a great many debts have been compounding for decades, but two are paramount: to Kathleen Copenhaver, my beloved wife, and to Michael Allen, my beloved friend and psychopomp. Crucial inspiration, support, advice, and criticism have come from Joseph Almog, Susanne Beiweis, John Carriero, Gregory Copenhaver, Rebecca Copenhaver, Dan Garber, Tony Grafton, Jim Hankins, Moshe Idel, Jill Kraye, Fabrizio Lelli, Ed Mahoney, John Monfasani, Calvin Normore, Ingrid Rowland, Charles Schmitt, Nancy Siraisi, Perkin Walker, Bob Westman, and Frances Yates. Sabbatical leaves from UCLA and grants from the American Council of Learned Societies, the American Philosophical Society, the Council for International Exchange of Scholars (Fulbright), the Getty Research Institute, and the Guggenheim Foundation have supported my research.

PART I

INTRODUCTION

CHAPTER ONE

THE SCRUPLES OF J. G. FRAZER

> Frazer is much more savage
> than most of his savages.[1]

1 SCAREHORSE

Where chariots raced in the stadium at Olympia, part of the track was called the Scarehorse – Taraxippos. Sometimes horses galloped past it, but sometimes they panicked, ending the race at that spot in a jumble of wheels and harness that no one could explain. Some said that a horse-whisperer was buried there. Some claimed that the tomb was empty, built long ago to atone for a murder. Others insisted that there was a corpse – of a man who had bad luck at racing and

> became a malevolent spirit (*daimona*) jealous of the riders. A man from Egypt said that Pelops got the idea to bury something there from Amphion of Thebes.... This Egyptian thought that Amphion and also Orpheus from Thrace worked dreadful magic (*mageussai*) so that wild animals came to Orpheus when they chanted, and rocks built themselves into walls for Amphion.[2]

The spectators at the Games were humans – mortal men – and it was they who traded tales about the Taraxippos. Otherwise, the Egyptian is the only human identified in the story and not treated as dead. All the trouble may have started with a dead man, but one of the dead turned into a *daimôn*, a spirit of a higher order. Pelops, Amphion, and Orpheus – heroes of myth and legend – are also more than human.

Pelops is a local figure, however, while the others come from far away. The road to Thebes, Amphion's city, ran more than 200 miles from the stadium, which stood on the west of the peninsula named after Pelops.

Figure 1. Chariot Racing: Panathenaic Amphora, 410–400 BCE. (British Museum, 1866, 0415.24)

The nearest corner of Thrace, the land of Orpheus, was a journey of 800 miles. What did these strangers have to do with Pelops and the startled horses, and why should Amphion advise Pelops to "bury something" at a racetrack? Pausanias, who described the Taraxippos around 150 CE, does not say. His book is an immense *Description of Greece,* a survey of classical monuments and their uses – mainly religious and political.[3]

At other sites where horses used to race, archaeologists have found strips or sheets of metal inscribed with curses, like this one buried in ancient Beirut: "Oreobarzagra, Akrammachari, Phnoukentabaoth, Obarabau, you holy angels, ambush and restrain, … attack, bind, overturn, cut up, chop into pieces the horses and the charioteers" – not all of them, just the teams that had to lose so another could win and bets could be collected.[4] Did Amphion advise Pelops to bury such a curse tablet (*katadesmos*) at Olympia, making him the patron saint of everyone who ever tried to fix a race? A curse aims to harm someone, just as a prayer means to help. When people address prayers to non-human agents, such as angels, we call their behavior 'religious.' Since a curse is a prayer inverted, it would seem to qualify as upside-down religion, like a Christian excommunication: Faustus fears the sacred rite of "bell, book and candle" that will "curse Faustus to hell."[5]

Or perhaps cursing can only be irreligious, a transgression against religion. The Epistle of James, just a little older than Pausanias and the Beirut tablet, teaches that "it is not right for praise and cursing (*katara*) to come out of the same mouth." And yet Jesus cursed a tree for not bearing fruit out of season. A day later, when Peter saw the tree, it had already dried up: "look, Rabbi," he exclaimed, "the fig that you cursed (*katêrasô*) has withered." Since few doubted that a curse could kill, the nine words that Jesus spoke to the tree will have been enough: "may no one ever eat fruit from you again." He asks no one else to blast the tree. His own words suffice. And the Gospel makes the incident an occasion for teaching about faith as the end of time approaches.[6]

Christian readers find the story plausible and its lesson apt. Since Jesus is God, he needs no help to destroy a tree and no one's permission: the awful power of divinity explains the event to all those who believe. The Gospel curse sustains religion, in no way contradicting or threatening Christian faith. What about curse tablets if they do not address angels or other non-human persons? If all they say is "attack, bind, overturn," who or what is the attacker? Perhaps no *message* at all is sent by words that are purely performative. The words themselves are agents of destruction – impersonal agents, unlike angels, gods, or the one God.[7]

The person in Beirut who scratched angry words on a lead tablet intended harm, knowing that he or she could not be its proximal agent. The words would do injury by themselves, if written correctly. Once the tablet had been inscribed and buried in the right way, the words would be effective just because those deeds had been done – *ex opere operato*. Likewise, for Roman Catholic believers, the words of eucharistic consecration also have an astonishing effect – turning wine into blood and bread into flesh – just because they are said by a priest, sinful or sinless, who intends to say them as sacramental. But no matter what the priest intends, if the words are not the right words, properly said, the wine and bread will remain as they were.

Which words of power are religious? Which words are magical? If they are on curse tablets, we can examine the words not only on the artifacts themselves but also in situations described by observers like Pausanias. In his day, the use of curse tablets in athletic competitions, business deals, courts of law, and affairs of the heart was common in the Mediterranean world. Racers or gamblers, angered or embarrassed by a bad day at the track, would rather complain about a curse than admit to backing a loser or driving poorly. Hence the Scarehorse at Olympia: what better way to cover bad judgment or a weak performance than a spooked track? And

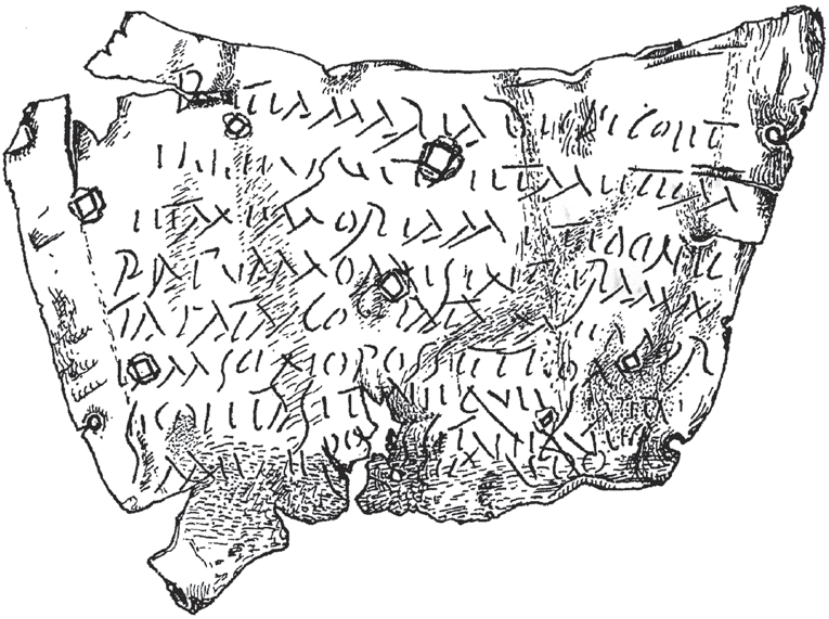


Figure 2. Lead Tablet with Latin Curse, First Century CE.
(British Museum; Collingwood [1935], p. 226)

who better to spook it than figures as mighty as Pelops and Amphion? When Pausanias mentions that "Pelops got the idea to bury something there from Amphion," he wraps an ancient myth around contemporary practice.[8]

Should we call that practice 'magic'? Pausanias thinks of it that way, describing Amphion as "working dreadful magic." By the time he wrote the *Description of Greece*, the verb *mageuô* meant simply 'do magic' or 'work magic,' much the same as those English phrases. But behind the verb is a proper noun – *Magos* – first used centuries earlier as the Greek name for a tribe of Persians that specialized in religion, not magic. In that original application, *mageuô* would mean 'Magize' or 'do what a Magos does,' and that – from a Greek point of view – might be religious or perhaps something else. But when Pausanias talks about the Scarehorse, claiming that Amphion taught Pelops how to jinx a race, he is not thinking about the ancient Persia of Xerxes.

Egypt comes up twice, however. Pausanias – or his source, more likely – cites an Egyptian informant to confirm that Amphion advised Pelops "to bury something" and that Amphion and Orpheus performed

amazing feats of magic. Egyptians may have specialized in producing the formularies from which makers of curse tablets copied their spells. From a Greek or Greco-Roman perspective, in any case, Egypt was a faraway place; farther even than the remote homelands of Amphion and Orpheus, it was an exotic locale where Greeks might expect magic and other wonders to be found.[9]

Pausanias writes in Greek about Olympia, however, and about the pan-Hellenic Games celebrated there. For the Greeks no place was more sacred, more charged with religion, more loaded with ritual and spectacle. If Pelops brought magic to Olympia from Amphion in Thebes, did foreign pollution defile the holy precincts, or is magic non-religious or even anti-religious in its nature, no matter where it comes from?

That Pelops "buried something" on the advice of a magician is just one among several accounts of the troublesome stretch of track at Olympia. Another explanation points to "a malevolent spirit (*daimona*) jealous of the riders."[10] In the first case, a curse tablet – an inanimate object – frightens horses because it has been buried, with the right words written on it, where the chariots will run. To make the horses collide, no one needs to read the words on the buried tablet or hear them: mute on a piece of metal, the words act on their own. Is the action magical just for that reason, because it is automatic and impersonal?

The jealous spirit of the competing explanation is a person, however, like the angels invoked by the Beirut tablet. But this spiritual person is also malicious, like *pneumata ponêra* or *akatharta*, the "evil" or "unclean" spirits whom Jesus and the apostles defeat, forcing competitors to cease their "strange practices" (*perierga*) and burn their books.[11] Tempted by legions of devils, Christians pray to good angels and dedicate churches to the archangel Michael, Satan's great foe. Yet Christians may not pray to demons, all of whom are evil. Are prayers to demons bad religion or just magic, which is also always bad? In either case, prayers are messages. Persons send and receive the messages, whereas curse tablets that lack invocations transmit no message at all. If (A) messages to angels are religious and (B) curses without messages are magical, will (C) messages to demons be religious because they are like A and unlike B? Or must all messages of type C be magical just because they cannot be religious?

Such questions have long perplexed the specialists. Introducing an authoritative book on curse tablets, one expert warns that he has

> avoided the use of the term 'magic.' … Magic, as a definable and consistent category of human experience, simply does not exist.…

> Even those definitions that speak of an overlap between magic and religion must presuppose them somehow to be distinct and definable entities.... The use of the term 'magic' tells us little or nothing about the substance of what is under description.[12]

The author of this statement – which is correct, as far as it goes – understands its limitations: mainly, that excluding 'magic' as useless for explanation *outside* the culture that produced it long ago and sustains it today does not require excluding it *inside* that same culture which, in the broadest sense, is Western and European, with roots in ancient Greece.[13]

The ancient Greeks coined a word, *mageia*, whose modern vernacular descendants are *magia, magie, magji*, 'magic,' and so on. When the Greeks used *mageia* and its cognates to talk about themselves and their non-Greek neighbors, their usage carried none of the theoretical baggage that confounds modern applications of the derived words. The baggage piled up quickly, however, as soon as Christians began to theorize about religion in late antiquity. The theorizing created categories used then and now to distinguish religion in general – and the approved Christian religion in particular – from a variety of beliefs and practices that seemed to need distinguishing: as 'inside' or 'outside,' for example, as 'ours' or 'theirs.'

Hence, while *mageia* and its progeny have perfectly good – indeed, indispensable – uses *inside* a certain cultural framework, knowing how to tell the inside from the outside, at some time and place, became a contested issue because the framework itself was so fiercely contested: we study those contests in a long history of orthodoxies and heterodoxies, creeds and heresies, crusades, inquisitions, wars of religion, and so on, paralleled by a quieter history of theologies, philosophies, cosmologies, and other accounts of things that also bring 'science' into the dispute alongside 'magic' and 'religion.'

This book focuses on the Renaissance, when Europeans worked to recover the ancient culture that had invented *mageia* and so much else. Because almost all the industrious scholars of the Renaissance were Christian, they inherited Christian preconceptions about magic, along with an earlier deposit of information about it that survived the Middle Ages. They had data and fixed ideas, but they also had the will to unfix their ideas by creating a critical discipline, philology, in its modern phase. When scholars recovered an old world from the stone and parchment ruins of classical antiquity, they also helped make a new world, where science and technology would eventually produce amazing novelties to challenge religion and other endowments of tradition – including magic.

2 THE GOLDEN BOUGH

The triad 'magic, religion, and science' still rings loud in Anglophone ears mainly because of one person and one immense book: Sir James George Frazer and his *Golden Bough*. Bronislaw Malinowski published an essay in 1925 under the title "Magic, Science and Religion." Andrew Lang had brought out his own *Magic and Religion* in 1901. Lang's dislike for Frazer's work was intense and obsessive. Malinowski was Frazer's protégé. Both started where Frazer had taken them. And Frazer had started with Pausanias.[14]

Born in Glasgow in 1854, Frazer made himself a founder of British anthropology by spending his whole career as a classicist at Cambridge, where he died in 1941. The century between his birth and death was a heroic age for the new social sciences, and Frazer was one of the heroes, but only after establishing himself as a master of ancient Greek and Latin. Bentham, Comte, Mill, and Spencer, names that still shine from the textbooks, shaped part of his education, though W. H. Thompson,

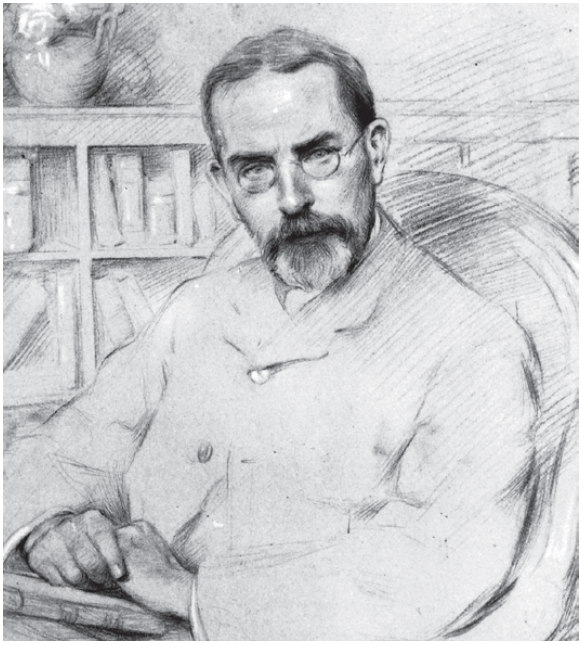


Figure 3. Sir James George Frazer in 1907
by Lucien Monod.
Pitt Rivers Museum, Oxford, through Bridgeman

H. A. J. Munro, and Henry Jackson – no longer widely recognized – commanded more of his time and effort: all three taught him classics at Trinity College, where Frazer excelled.[15]

In 1879 he won a prize fellowship at Trinity and was joined there in 1883 by William Robertson Smith, who combined biblical philology with anthropology. To learn that new science, Frazer could read E. B. Tylor and other founders of the field, but his personal connection with Robertson Smith – also a Scot – was much stronger. As an editor of the *Encyclopedia Britannica*, Smith asked Frazer to contribute, and not just articles on the classics. He also wrote about taboos and totems, gathering material for a book (his first) that he published in 1887: *Totemism*. By that time, he had already started the much larger project that would become *The Golden Bough*, describing it as a book on "comparative mythology."[16]

Frazer's description of his monumental work is telling in both its words. The second says that the topic is *mythology*, traditionally the business of erudite classicists like his Cambridge teachers. For centuries they had tracked down every detail about heroes like Aeneas, who had been instructed by mysterious figures like the Sibyl to do strange deeds, like taking a golden branch from a tree in order to descend to the underworld. Frazer's glistening prose takes us inside "the sanctuary at Nemi" to

> a certain tree of which no branch might be broken. Only a runaway slave was allowed to break off, if he could, one of its boughs. Success in the attempt entitled him to fight the priest in single combat, and if he slew him he reigned in his stead with the title of King of the Wood (*Rex Nemorensis*). According to the public opinion of the ancients the fateful branch was that Golden Bough which, at the Sibyl's bidding, Aeneas plucked before he essayed the perilous journey to the world of the dead.[17]

Vergil's story alludes to an ancient rite of priesthood and kingship: that much is just philology decoding mythology, in the usual way. But Frazer makes the mythology *comparative*, thereby *universalizing* it. First he surveys *all* the Greek and Roman sources, collecting data about "a line of priests known as Kings of the Wood, who regularly perished by the swords of their successors, and whose lives were in a manner bound up with a certain tree in the grove." This learned conclusion is incomplete, however: it does not "suffice to explain the peculiar rule of succession to the priesthood." Frazer suggests "the survey of a wider field.... It will be long and laborious, ... a voyage of discovery, in which we shall visit many strange foreign lands, with strange foreign peoples, and still stranger

customs."[18] By hunting for kings of the wood in *all* places and at *all* times, including the present and including people called 'primitive' and 'savage,' Frazer will apply philology to present as well as past experience and help invent a new human science.

All this was under way by the mid-1880s. Complete in 1915 in eleven volumes of a third edition, *The Golden Bough* is powerfully written and was incessantly expanded, reaching nearly 4,600 pages in its final state. Since 36,000 copies of the third edition were printed by 1922, Frazer's published thoughts filled more than 164 million pieces of paper. Many of those thoughts were about magic and are still influential. But this was not true in 1890, the year of the first edition, when Frazer's theories had not yet matured.[19]

A little earlier, in 1884, the young Cambridge fellow had started another project, more the sort of thing that his elders and backers might have expected – a translation of Pausanias with abundant annotation. Since Pausanias writes about temples, palaces, stadia, theaters, and other

Figure 4. Aeneas and the Sibyl.
(Baur [1703], pl. 133)

monuments, with the statuary and other art in and around them, his descriptions are loaded with mythology and mythic heroes – like Pelops, Amphion, and Orpheus in his account of Olympia. For an ambitious scholar like Frazer, this was home turf, though the sites were abroad. In 1890 and 1895, he traveled to Greece to see the ruins himself. In 1898 his new Pausanias was complete in six volumes of 3,000 pages, mostly commentary in painstaking detail, but no Greek text.[20]

Ten years earlier, Frazer had written a letter that shows how years of work on Pausanias would inform the "comparative mythology" of *The Golden Bough:* "if we use mythology in the sense of primitive man's ideas in general, then superstition is only applied mythology – superstition is primitive ideas plus practice, mythology is primitive ideas minus practice."[21] Mythology is no longer just Greek or Greco-Roman or Semitic or Nordic or Indian. Mythology is simply human, and some contemporary humans are "primitive." When primitive people say what they think, myths are the product. When they put their thinking into practice, the result is superstitious behavior, which Frazer would later call 'magic.'

While wrapping up his Pausanias in 1898, Frazer got news of research in Australia that changed his views about totems, supplying evidence that their use had developed over time in an evolutionary way. This bulletin from the field inspired an early formulation of the theorizing about magic, religion, and science that was not yet ready for the first edition of *The Golden Bough.* "If we define religion as the propitiation of natural and supernatural powers," he argued

> and magic as the coercion of them, magic has everywhere preceded religion. It is only when men find by experience that they cannot *compel* the higher powers … that they condescend to *entreat* them. In time … they begin to realize that entreaty is also in vain, and then they try compulsion again; but this time the compulsion is applied … in a different way from the old magical method. In short, religion is replaced by science. The order of evolution, then, of human thought is magic – religion – science.[22]

This is the core of a theory that still prevails after a century of criticism, much of it negative or worse. Few of Frazer's critics have had the advantage of his circumstances – a world where a silver-tongued don could still assume Mosaic authority by putting a new discipline into eleven deluxe volumes. Even fewer of the critics could write like Frazer, whose ideas entered the temples of modern art with T. S. Eliot as their usher. The worst the attackers could do was mock Frazer's rhetoric, explode his methodology, impugn

his evidence, and refute his theories. Nonetheless, if a refuted theory still satisfies most people (though not the experts) who want to understand what that theory aims to explain, perhaps it has not been thoroughly refuted: that still seems to be the case with Frazer on magic.

The elements of Frazer's theory are a set of *distinctions*, a *sequence*, and a pair of *principles*. Magic is not religion or science, and religion is not science or magic: the three are distinct. They occur in a fixed order: magic always comes before religion, and religion always comes before science. This sequence is universal – a law governing everything in its domain. Moreover, the law is evolutionary, hence either a law of nature or at least like such a law. Magic, seemingly just nonsense and incoherent, is actually based on sound principles – similarity and contagion – misapplied as magic but applied correctly as science. These common principles explain why magic has been so persuasive to so many people.[23]

Frazer's *Golden Bough* has also been mightily persuasive about magic, though it was not yet that in the 1890 version that appeared just before he left for Greece to inspect what Pausanias had inspected. Soon after he returned, bad news caught up with him. An Oxford historian had read *The Golden Bough* and found a mistake – two words mistranslated in a description of Druid ritual by Pliny the Elder. The error was important and embarrassing but not catastrophic – except as felt by Frazer. He moved quickly, not only publishing a correction but also writing the Master of Trinity to suggest that the College Council might think twice about renewing his fellowship. In the end, Frazer stayed at Cambridge, and no one asked him to leave. But the story lives in his legend at Trinity and in the annals of *odium philologicum*.[24]

Perhaps theology, as the science of divinity, deserves an odium all its own. But why a special hatred for the merely human enterprise of philology? Perhaps philological scorn, like God's love, knows no bounds: students of classical languages have been denouncing one another's mistakes, on papyrus and parchment and later in print, ever since Aristarchus first wielded an obelus. Frazer understood those pallid battles of invective and death by footnote. He grew up and thrived in them. Lest he perish, parsed by his peers into extinction, he put on the armor of scrupulosity, pledging allegiance to the maxim that no fault is too small for a big punishment. An offer to resign would prove that he, like Browning's grammarian on his way to the grave, had "settled *hoti*'s business" in the end:

> with the throttling hands of death at strife,
> ground he at grammar;

still, thro' the rattle, parts of speech were rife:
while he could stammer
he settled *hoti*'s business – let it be! –
properly based *oun* –
gave us the doctrine of the enclitic *de*,
dead from the waist down.[25]

The hawk-eyed William James observed this killing will-to-perfection in Frazer when they met in 1900, sharing a table in Italy. "He of the *Golden Bough*," James writes, "*Pausanias* and other three- and six-volume works of anthropological erudition, … a sucking babe of humility, unworldliness and molelike sightlessness to everything but *print*. … But he is conscience incarnate" – conscience hardened by merciless, unceasing combat about a small corpus of texts in dead languages read by very few people.[26]

3 MAGIC AND THE CLASSICS

One *casus belli* in Frazer's day was when and where to put the Troy of Homer's *Iliad*. There was evidence in Pausanias, plainly, but that testimony was not trusted by Enno Friedrich Wichard Ulrich von Wilamowitz-Moellendorff. In 1897, before Frazer finished his Pausanias, Wilamowitz succeeded Ernst Curtius at Berlin to become Europe's most eminent classicist, having made his name by savagely defending *Wissenschaft* against Nietzsche's *Birth of Tragedy*. He and his followers had also derided Pausanias as dull, clumsy, and dishonest. And when Heinrich Schliemann, a self-funded amateur, used Pausanias to locate Troy, Wilamowitz mocked him too. But as excavations turned up ruins and artifacts that helped Schliemann's case, Wilamowitz looked less and less omniscient.[27]

Grief for the Berlin professor was grist for Frazer's mill as he prepared his own Pausanias and recovered from mistranslating Pliny by grinding away at Wilamowitz – even while admitting yet another mistake. Frazer had wrongly described Athens as lacking walls in the fifth century BCE, thus siding with Wilamowitz. He corrects this error by gratuitously slamming the German scholar while citing primary sources that he himself had missed: "I decidedly prefer the evidence of Herodotus and Thucydides," he sniffs, "to that of … Professor von Wilamowitz-Moellendorff."[28]

And so it went. As an esteemed governor of a learned guild, Frazer felt conscience-bound to do everything required by any erudite task that he

took on and to do it perfectly: otherwise, resign. It was that impossible standard – *everything* to perfection – which eventually forced the learned to acknowledge that magic too, not just religion, philosophy, and art, was a classical tradition, one with its own primitive avatars. Having checked and re-checked every iamb, diphthong, and lacuna from Homer to Horace, scholars also learned what those ancients ate, what laws they broke, what gods they feared, and so on, eventually getting to the race-tracks and to magic. Coming to terms with magic, since there was so much of it in antiquity, was inevitable for a hypertrophic classicism.

Needless to say, magic was not a happy find for everyone: Wilamowitz, for example. From the eminence of his chair in Berlin, he once described magic as what happens when "the old religion has decayed." Although he promoted new methods for studying papyri, what provoked this remark was one of papyrology's great successes: the great collection of *Greek Magical Papyri* that Albrecht Dieterich began to plan in 1905.[29]

Karl Preisendanz took charge of the project after Dieterich died in 1908. By that time, Franz Cumont was working on mystery religions and astrology, a subject explored by Joseph Bouché-Leclercq in connection with divination and also by Franz Boll, an authority on Ptolemy. Joseph Bidez was already studying the Neoplatonists, though he and Cumont published their findings on the later Greek Zoroastrians, *The Hellenized Magi*, only in 1938. Theodor Höpfner's *Greek-Egyptian Revelation-Magic*, a large work of great theoretical reach, was complete by 1924, just before Wilhelm Gundel extended the survey done by Boll in *Astrological Belief and Theory*. Around the same time, Julius Röhr published his *Concept of Occult Power in Antiquity* (1923), an important monograph on magic and occult qualities. Attention to the physical side of those topics had grown with Marcellin Berthelot's writings about alchemy, starting in 1885, which Julius Ruska continued in the 1920s. Around the same time, however, it was not the alchemical but the theosophical Hermes who attracted Arthur Darby Nock's attention. Nock began his unpublished Gifford Lectures on Hellenistic religion in 1939.[30]

All this work and more on the foundations and framework of ancient magic had been done before World War II broke out. Years later, one shocking consequence would be a book by Morton Smith, *Jesus the Magician* (1978), whose title is enough to indicate the outrage it caused, though it might have caused more had Smith not already baited the lions with an even more provocative study of Mark's Gospel. Because the controversy about Mark still continues, with allegations that Smith forged his evidence, the Jesus book has had less attention than it deserves.[31]

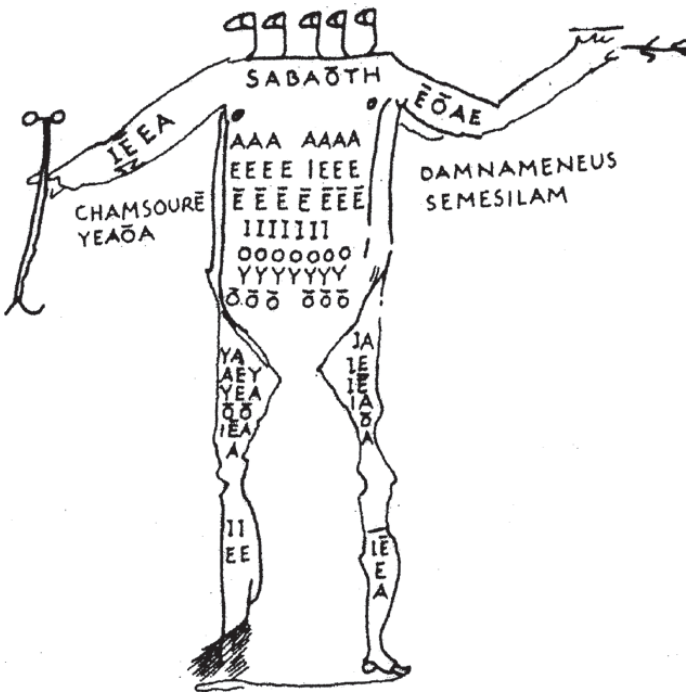


Figure 5. Greek Magical Papyrus, Fourth Century CE.
(*PGM* 2.154–81, Betz [1986], p. 18)

Frazer had sensed the problem that Smith would face, writing in 1904 that "the facts of comparative religion appear to me subversive of Christian theology" – or perhaps of religion itself.[32] When they read Christian scripture as texts of a Hellenistic religion, Nock and others prepared the way for Smith by extending Frazer's method: first, study Vergil's golden bough by examining *all* the golden boughs; next, study Christ's miracles by examining *all* the ancient miracle-workers. But why stop with ancient miracles? Why should magic, oracles, and witchcraft in Athens not be illuminated by witchcraft, oracles, and magic in Africa?[33]

The questions are corrosive, as Frazer said, eroding not only the pieties of Christian faith but also the conventions of Romantic classicism after Winckelmann, when a soul-centered canon of beauty let people think that all the ancients had bodies of flawless Parian marble and spotless minds to match. The reverse of that fantasy gave nightmares to a reader of the magical papyri whom Wilamowitz described:

> I once heard an eminent scholar complain that the papyri were found because they take the noble luster away from the classical. That they do so is undeniable, but I'm glad of it. For I want to understand my Hellenes, not admire them, so I can judge them fairly.[34]

Even Wilamowitz had to acknowledge that when 'his' Hellenes made and traded magic spells, they summoned the gods of Euripides in the language of Plato to supply their most banal needs: to attract a lover, stimulate an erection, halt menstruation, heal swollen testicles, attract business, win at dice, open a lock, catch a thief, restrain an enemy, defame a rival, provoke hatred, induce madness, cause insomnia, cure a headache, reduce a fever, counteract poison, dry runny ears, heal a tumor, improve memory, send a dream, enter a trance, see the future, consult the dead, invoke a god, and exterminate insects.[35] The following spell, typical of hundreds, is a general plea for protection:

> Taking sulfur and seed of Nile rushes, burn them as incense to the moon and say 'I call on you, Lady Isis, whom Agathos Daimon permitted to rule in the entire Black Land. Your name is LOU LOULOU BATHARTHAR THARÊSIBATH ATHERNEKLÊSICH ATHERNEBOUNI ÊICHOMÔ CHOMÔTHI Isis Sothis, SOUÊRI, Boubastis, EURELIBAT CHAMARI NEBOUTOS OUÊRI AIÊÊOA ÔAI. Protect me, great and marvelous names of the god (add the usual); for I am the one established on Pelusium, SERPHOUTH MOUISRÔ STROMMÔ MOLÔTH MOLONTHÊR PHON Thoth. Protect me, great and marvelous names of the great god (add the usual). ASAÔ EIÔ NISAÔTH. Lady Isis, Nemesis, Adrasteia, many-named, many-formed, glorify me, as I have glorified the name of your son Horus (add the usual).'[36]

Adrasteia, who nursed the infant Zeus, and Nemesis, enforcer of divine justice, are aspects of the Egyptian Isis – of Lou Loulou Batharthar – who feeds on sulfurous smoke and delivers protection.

4 MISCELLANEOUS NONSENSE

Whether Lou Loulou's spell is magic or religion or both or neither, it is certainly Greek and ancient and therefore part of what began to be recovered in the Renaissance. Jacob Burckhardt, seeing this recovery of the past as an epochal turn toward the modern, praised the Italians who created that decisive cultural moment for their sharp minds, steely wills, and refined sensibilities. For all their sophistication, however, those buccaneers of the spirit opened themselves to superstitions unknown

to their medieval grandparents. By reviving the wisdom of the ancients, they also resurrected a great deal of foolishness – as Burckhardt saw it – the magic, astrology, divination, and demonology that were part and parcel of Greco-Roman life.[37]

To recover what had been lost from antiquity, the Renaissance had to cure the deafness that reduced classical eloquence to a whisper in the Middle Ages, but ancient wisdom's voice was also the Roman witch's screech and the chant of the Greek diviner. Marsilio Ficino, the Platonic high priest of Medicean Florence, feared demons as a Christian, and as a philosopher he constructed new theories to explain magic and astrology. "By contrast," according to Burckhardt,

> Pico della Mirandola made a historic change in this domain.... In astral superstition he finds a root of all ungodliness and immorality. If the astrologer believes in anything at all, it must be the planets that he worships as his gods, ... [and] nothing promotes evil more than when heaven itself seems to be its author, thus causing belief in eternal salvation and damnation to wither away. Pico even took the trouble to check the astrologers empirically, ... but his main achievement ... was a positive Christian theory of world government and freedom of the will.

In his *Disputations against Divinatory Astrology*, says Burckhardt, Pico rejects astrology as immoral and irreligious, objecting mainly to its determinism, which he counters with a defense of free will. Free human agency is at the core of modern individualism, which astrology destroys and magic must also threaten if it is automatic (like some curse tablets) or coercive (as Frazer claimed). The Burckhardt who hails Pico for opposing astrology sees magic as debased – like Wilamowitz and many others. But Pico also proposed a theory of natural magic and invented Christian Kabbalah – encouraged by Ficino, whose philological discoveries provided philosophical foundations for belief in magic.[38]

From Burckhardt's perspective, the labor of erecting such foundations was a waste – at best. Suppose that the modern era – in its essence the opposite of primitive – starts with the Renaissance, as Burckhardt maintains. Grant also that the Renaissance constructs modernity by recovering antiquity. Prominent in that recovery is the magic theorized and practiced by the ancients. Such magic, if we believe Frazer, is like the magic of primitive people in its nature and principles: hence, the study of primitive magic shows what ancient magic was like. Moreover, the ancient magic revived in the Renaissance was not an antiquarian diversion. It went to the heart of post-medieval culture, endorsed not just by

Ficino and Pico but by many other leading thinkers for the next two centuries. Europe's greatest intellectuals, heralds of modernity, promoted magical beliefs and practices that are characteristically primitive. How could that be?

The most persuasive answer came – indirectly – from Frances Yates, starting in 1964 with her dazzling book on *Giordano Bruno and the Hermetic Tradition*.[39] Although Yates's writings show no interest at all in anthropology, her solution to the problem reflects Frazer's conception of magic in its relation to science. "The same principles which the magician applies in the practice of his art," claims Frazer,

> are implicitly believed by him to regulate the operations of inanimate nature; in other words, he tacitly assumes that the Laws of Similarity and Contact are of universal application and are not limited to human actions. In short, magic is a spurious system of natural law as well as a fallacious guide of conduct; it is a false science as well as an abortive art. Regarded as a system of natural law, that is, as a statement of the rules which determine the sequence of events throughout the world, it may be called Theoretical Magic: regarded as a set of precepts which human beings observe in order to compass their ends, it may be called Practical Magic.[40]

Theoretical magic is false science, and practical magic is bad technology, according to Frazer, but magic, according to Yates, was a first step toward modern science and technology. Like the magus, the scientist has theories about the world; like the wizard, the engineer applies those theories to change the world. Ficino, Pico, Bruno, and Campanella stir the cauldron for Boyle, Newton, Newcomen, and Watt – with help from the Rosicrucians. The Rosicrucians propagate the 'tradition' that Yates calls 'Hermetic' and traces to the Greek *Hermetica* that Ficino translated in 1463.[41]

Frances Yates was right, and Frances Yates was wrong.

She was right to make magic big news for students of modern Europe, and for Anglophone readers it was indeed news when Yates published her Bruno book in 1964. Until that time – despite all the research about ancient magic done before the War by Berthelot, Bidez, Boll, Bouché-Leclercq, Cumont, Dieterich, Gundel, Hopfner, Nock, Preisendanz, Röhr, Ruska, and many others – English-speaking students of medieval and early modern Europe had given only sporadic attention to this evasive and explosive topic. Alchemy was an exception because it was a good fit for the new history of science that George Sarton (a chemist) launched after World War I: Eric Holmyard's *Makers of Chemistry* appeared in 1931. A more sensational outlier was Margaret

Figure 6. Dame Frances Yates in 1977.
(The Warburg Institute)

Murray's *Witch Cult in Western Europe* (1921), which applied anthropology to events in medieval Europe. Conspicuous in a different way was another exceptional achievement, the eight thick volumes of Lynn Thorndike's *History of Magic and Experimental Science*, whose publication began in 1923 and continued until 1958.[42]

Introducing his first volume on *The First Thirteen Centuries of Our Era*, Thorndike starts with *The Golden Bough*, noting that "Frazer has repeatedly made the point that modern science is an outgrowth from primitive magic." Thorndike's command of the documentary evidence for medieval and early modern magic was astounding. Since he read almost all of it in Latin, mainly in manuscripts, he had to master the skills of classicism. Just as Albrecht Dieterich had to be an expert Hellenist in order to decipher the magical papyri, just as A. E. Housman had to be a superb Latinist in order to edit a poem on astrology by Manilius, Thorndike had to be an intrepid paleographer and accomplished linguist in order to collect and digest the Latin writings in which learned Christians recorded beliefs that he – Thorndike – saw as magical and hence, at least in some sense, primitive.[43]

Thorndike was an early supporter of *Isis*, the journal that Sarton founded just before World War I as the official voice of the History of Science Society. In the years after World War II, when the history of science was not yet a power in universities, Sarton himself was writing many of the journal's reviews while also preparing its annual bibliography. Handling this crushing workload and speaking with patriarchal authority, he inserted a summary review into the 1950 bibliography, describing a text about Mandaean astrology as "a wretched collection of omens, debased astrology and miscellaneous nonsense ultimately derived from … all the superstitious flotsam of the Near East."[44]

Otto Neugebauer, who had written his thesis in the 1920s on Egyptian arithmetic, replied in the next volume of *Isis*, taking less than a page to explain "why a serious scholar might spend years on the study of wretched subjects like ancient astrology." By 1950, Neugebauer was a distinguished mathematician and the world's leading authority on mathematics, astronomy, and astrology in ancient Mesopotamia, achievements that made him a professor at Brown University and a member of the Institute for Advanced Study. Citing Cumont's collection of Greek astrological manuscripts, he points out that the Mandaean material provides similar information about "generations of men who had to live without the higher blessings of our own scientific era." Knowing Thorndike's association with Sarton's projects, he adds that "six large volumes of miscellaneous nonsense were published by Professor Thorndike and have become a treasured tool for the study of Mediaeval scientific literature," while "the Renaissance has gained immensely from the researches carried out by the Warburg Institute on the astrology of preceding periods." Neugebauer concludes that "when the recognized dean of the History of Science disposes of a whole field with the words 'the superstitious flotsam of the Near East,'" the result is "the destruction of the very foundations of our studies."[45]

For Thorndike the reprimand was problematic. He shared Sarton's positivist instincts, yet he had given Neugebauer six volumes of testimony for his injunction to recover and study "the texts as they are, regardless of our own tastes and prejudices." Nonetheless, Thorndike despised the Renaissance, so Aby Warburg's elegant essays on post-medieval astrology left him cold. Not for him to take Marsilio Ficino seriously or think generously about Ficino's medical astrology. Such tasks (in the Anglophone world) fell to Yates.[46]

Since Yates had read Thorndike, his *History* could have informed her about Frazer's theory of magic and science, but she surely had other

reasons to be aware of Frazer. In the notes to *The Waste Land*, Eliot cites *The Golden Bough* as a "work of anthropology … which has influenced our generation profoundly." He was born in 1888, Yates in 1899, as Frazer's study of primitive magic became a totem of the modernism that Eliot promoted in the England of Yates's youth: he published *The Waste Land* in 1922, three years before Yates brought out her first article on Shakespeare in the *Review of English Studies*. Since Yates came to magic from this earlier work on English literature – John Florio and John Eliot as well as Shakespeare – she will have been alert to Frazer's literary fame and to the connections that he made between science and magic.[47]

Just as Yates was right to take magic seriously, she was also right to be persuaded – whether by Thorndike or by Frazer or otherwise – that magic resembles science: both theorize about nature, and both underwrite practices that aim to change nature. Where to take similarities of that magnitude is a different question. Beginning with her Bruno book, Yates makes the connection textually concrete, propagated by a 'tradition' that she calls 'Hermetic.' That this tradition starts as late as 1463, when Ficino translated the Greek *Hermetica* into Latin, is unproblematic since she sees it is post-medieval and modern – foundational, in fact, for modern culture.

Although students of *tradition* might worry that Yates misuses that term, I have a different objection to her powerfully written and still influential books about magic. She was right to focus on magic and attach it to the history of science, but she was wrong – in my opinion – to identify post-medieval enthusiasm for magic with a *Hermetic* tradition, even though she did this so effectively that educated speakers of English now often use 'magical' and 'Hermetic' as if they were synonyms or nearly so.

That mistake might have been less durable if Yates's colleague at the Warburg Institute, Daniel Pickering Walker, had influence equal to his accomplishments. Although he was productive, famous, and highly respected, Walker was also quiet, careful, and wary of generalizing. Before Yates made the study of magic fashionable, he and she had identified it as a key feature of post-medieval thought, thus affirming the judgment of Aby Warburg, the eponymous hero of the Institute to which Walker moved permanently in 1961, three years after publishing his groundbreaking study of *Spiritual and Demonic Magic from Ficino to Campanella*. Yates had already been connected with the Warburg for twenty years, having written for the *Journal* since 1938.[48]

Yates locates magic in Europe's high culture at the end of the Middle Ages. She shows in detail *that* Ficino, Pico, Bruno, and their

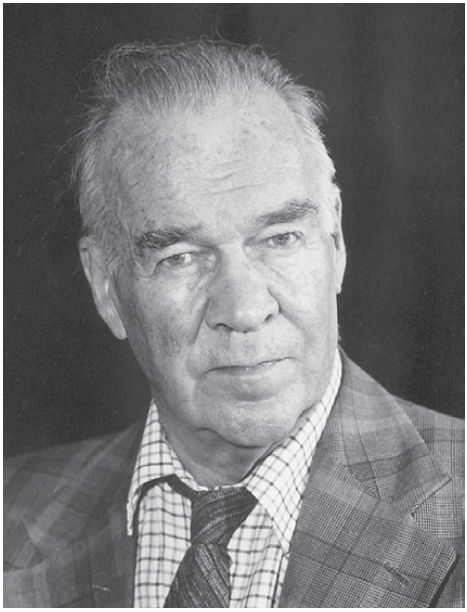


Figure 7. Daniel Pickering Walker around 1980. (The Warburg Institute)

contemporaries took magic seriously. As to *why* they should have done so, her explanation is genetic, making sense of magic in the Renaissance by showing where it came from, by locating it in a tradition that she calls 'Hermetic.' However, since the Hermetic texts that Ficino recovered are not about magic, and since those texts are the core of her case for Renaissance 'Hermeticism,' her genealogical response is off the mark. Besides, were she not wrong about the texts, we might still wonder whether Ficino and others had principled reasons for believing in magic, reasons more persuasive than ancient, authoritative testimony.

It was Walker who began to find the reasons. Before working on magic, he had already done important research on music theory in the later Renaissance. And he played the violin. Technical and practical understanding of music and musicology stands behind the first chapter, on "Ficino and Music," of *Spiritual and Demonic Magic.* Walker saw how the study of music could ground a theory of magic. He also saw that advocates of magic, as pious Christians, needed just such a theory to justify their own studies and uses of a *natural* magic that could be kept distinct from the *demonic* magic which all the righteous must renounce.

Walker's key insight about music was that air – the medium of music – is like the *pneuma* or *spiritus* that ancient Greeks and Romans treated as a physical and explanatory link between lightly embodied spiritual things (like the lower human soul) and highly rarefied material things (like smoke from a sacrifice). Observing how the strings of a lyre resonate through air or spirit with the cosmic music of planets and stars, a magus can use this natural medium, without help from demons, to draw power down from the heavens.

Walker showed that belief in magic by educated Europeans was not simply habitual or traditional. He identified and described *theoretical foundations* for magic. His findings were transformative in two ways. First, the makings of the theory that he presented were nothing like the 'primitive' notions of resemblance and contagion in Frazer's account. Second, the theory came from a place and a time – Europe in the Renaissance – when Ficino and others were recovering *philosophical* doctrines (not Hermetic sermons) that Plotinus, Proclus, and other ancient sages had already used to explain and defend magic.[49]

Illuminating the word 'magic' is a task of this book, where it is used sometimes broadly and sometimes narrowly: in a narrower way, it is the name – for example – of a theory summarized by Proclus in the fifth century and described by me in Chapter 5; in a broader way, 'magic' also names a larger and longer-lived set of beliefs and practices, including alchemy, astrology, demonology, divination, Kabbalah, witchcraft, and so on, originating in the West and still shaped by that historical experience. For reasons explained in Chapter 15, I avoid using 'magic' even more broadly than that – to label a global category of human theory and practice. Until the latter part of my story – the part that comes after Cornelius Agrippa (see Chapter 12) had written about an 'occult philosophy'– I also try to avoid 'occultism' and its relatives.

I claim that in the West, before the Enlightenment, educated people almost always believed in magic – in some loose sense – and that this common belief had philosophical foundations, almost always unexamined. This view may be puzzling or – for some readers – repugnant: see the fourth part of this first chapter, for example. To support my claims about magic and philosophy, I present evidence from texts written over a long stretch of time, starting more than two millennia before the story ends in the early eighteenth century. Topics introduced in earlier chapters are revisited later, requiring some repetition and backtracking that I hope will be helpful.

CHAPTER TWO

MAGIC AS A CLASSICAL TRADITION AND ITS PHILOSOPHICAL FOUNDATIONS

> These are questions you must ask:
> what people do you come from,
> and how old are you –
> how old were you when the Mede came?[1]

1 MAGEIA

Among the categories that people have used to sort their thoughts and actions – economics, politics, religion, science, art, magic, and so on – the last has a strange history. The ancient Greeks first used the word 'magic' to describe the religion of the Persians, a dreaded enemy. More than two millennia later, Europeans educated in the Greek classics were still using 'magic,' applying it not to an enemy, however, but to colonial subjects. When they called this later magic 'primitive,' the theory that they relied on was most famously expressed by J. G. Frazer, who maintained that magic was related to religion and science as a lower stage of evolution to higher stages. What was Frazer thinking about – or E. B. Tylor before him? What could a religion of ancient Iran have to do with the Anahuac or Papua of their day? To answer that question, we can ask another that Frazer knew well: "How old were you when the Mede came?"[2]

Xenophanes of Colophon, an Ionian poet and philosopher, asked about the Medes sometime after 546 BCE, roughly half a century before the massive Persian invasions of Greek territory reported by Herodotus. Since the question is a fragment, its point is uncertain, like other fragmentary evidence suggesting that Xenophanes was a monotheist – or a henotheist – who tried to understand the cosmos by investigating its material elements. Decades before Herodotus invented history, Xenophanes may have had ideas about religion and science that foreshadow our own.

Figure 8. Zoroastrian with Sacred Boughs, Gold Plaque, Fifth–Fourth Centuries BCE. (British Museum 1897, 1231.48)

But when the Mede finally came in force, it was Herodotus who called one of their six tribes *Magoi*, the name from which later Greeks derived the word *mageia*.[3]

The story of magic in the West starts with Herodotus, and the early chapters are mainly political. The work of the Magi as he saw it was not the theology or cosmology that interested Xenophanes. In the *Histories* they are conniving thugs: rebels, conspirators and usurpers, archers and spearmen who also use their bare hands wantonly to kill everything they see – except humans and dogs. They sacrifice horses, pour libations at funerals, sing chants at sacrificial rites, and cast spells to quell storms. This last talent was useful to an invading army, but for political rivals there was as much risk as reward in their skill as prophets, diviners, and interpreters of dreams.[4]

When King Cambyses, whose family had once been vassals of the Medes, lost his throne to Smerdis, the official Persian line was that the usurper was not the monarch's brother of that name but a Magus in

disguise. Herodotus repeats the story, calling Smerdis "the Magus" as if it were a royal title – but a stolen one. The root of the Old Persian word, *magus*, may mean 'member of the tribe,' which would reinforce what Herodotus says: that the Magi were a tribe of Medes. But there is no trace of the word before the fifth century, when its meaning for the Persians was no longer ethnic.[5]

Herodotus says a great deal about the Magi, but neither he nor Xenophon seems to have witnessed the rites performed by them. Xenophon describes them as an official state priesthood. A stone carving made around 500 BCE shows them wearing distinctive robes and headgear, carrying the *baresman* or sacred bundle of twigs, and accompanied by sacrificed animals. The style of the image is Greco-Roman, and Greeks could have seen Magi in the cities of Ionia by the time it was made. The first archaeological traces of the religion that the Magi practiced are fire-holders dated shortly after 539. The religion was older, the Zoroastrian faith that originated in eastern Iran among a pastoral, and eventually nomadic, people – around 1700 at the earliest, by 1100 at the latest. The Zoroastrianism about which anything is securely known, however, was the religion that entered Achaemenid Persia in

Figure 9. Sassanian Coin from India with a Zoroastrian Fire Altar, Third Century CE. (Coinindia, http://coinindia.com/fifty-coins2, coin #16)

the mid-sixth century, when Astyages was king; it probably came from Median Magi, whose people had established their kingdom in 711, when they were already Zoroastrian. Cyrus defeated Astyages in 558, to be succeeded in 530 by the Cambyses whom Smerdis the Magus replaced. All the Achaemenid kings were devout Zoroastrians.[6]

As heirs of the Persian empire, later Iranians claimed Zoroaster as their own, over the protests of competitors from Syria, Afghanistan, and Azerbaijan. Heedless of those local interests, Hellenistic Greeks transferred the prophet to Babylon and turned him into a 'Chaldaean' – an astrologer. Already in antiquity, the debate about Zoroaster's chronology was even murkier than the contest about his birthplace: some settled on 570 as his birth year; others put it at the start of the sixth millennium. Pliny the Elder, whose Zoroaster is the West's primeval Oriental wizard, opted for the much higher date in his authoritative encyclopedia. The facts are less colorful: within the scope of historical time, an Iranian prophet founded a religion whose two supreme deities are locked in combat – Ahura Mazda against Ahriman, Good against Evil. In the end, the good God of Light, who creates the world through his own Holy Spirit with six divine helpers, vanquishes the evil God of Darkness in a fiery apocalypse that also destroys wicked mortals, both living and dead, leaving only the righteous to enjoy immortality.[7]

Zoroastrianism was both a creed and a program for renewal, not inherited by children but chosen by mature adults, and its reforms opposed much of what would later be called 'magic' by speakers of Greek and Latin. A prayer of the converted hopes that Ahriman's defeat will also bring down the "demons and devils, sorcerers and sinners," and Greeks were surprised by the Persian refusal to treat temple statues in human form as divine. Though Xerxes failed to conquer Greece, he boasted in stone at Persepolis that he had destroyed the alien demons: "where previously Daevas were worshipped … by the will of Ahuramazda I destroyed that sanctuary of Daevas … and worshipped Ahuramazda with due order and rites."[8]

The approved rituals show through in late accounts by Strabo – the earliest in any language – and by Arrian, Curtius Rufus, Dio Chrysostom, and Pausanias. The Magi tend sacred fires, never letting them die, and sacrifice animals to the flames. They also sacrifice to water, the other purifying element. These priestly comrades of Zoroaster, according to Dio, are those "best suited for truth and able to understand God, called 'Magi' by the Persians because they know how to serve the divine – unlike the Greeks, who do not know what the word means and use it as a name

for sorcerers." Greek authors get some of the Iranian theology right, however: Plutarch gives a passable description of the cosmic struggle between Horomazes (Ahura Mazda) and Areimanios (Ahriman), a sacred history known to only a few other Greeks before him. Plato, Aristotle, Eudemus, and Theopompus could have learned about Zoroastrian customs and cosmology from Magi traveling in the West.[9]

The wide reach of Zoroaster's faith may have affected later Mithraic ritual, where the 'Persian' is a grade of initiation: the word *magos* also occurs in a Mithraic inscription. In the superficial account by Diogenes Laertius, the Magi are pious, just, and frugal priests who lead a simple life, practice divination, and see spirits in the air, though "with the art of magic they are wholly unacquainted." But in the same period nameless authors of technical treatises on magic attributed them to Zoroaster and Ostanes, a Magus who reputedly came to Greece with Xerxes and taught Democritus: his namesake was the Bolos Demokritos of Mendes in Egypt who compiled magical pseudepigrapha around 200 BCE. A little later

Figure 10. Three Kings as Persian Magi Bearing Gifts, Sixth Century CE, Sant'Apollinare Nuovo, Ravenna. (Bridgeman)

the Magi who served Antiochus III as astrologer-priests in Commagene were actors in the larger theater of syncretism that entertained so many in East and West alike.[10]

After Jerusalem fell to the Romans in 70 CE, more and more of the audience were Christians who knew the Magi as exotic sages, though only one of the evangelists (Matthew) tells their story. When a party of Magi travels to Jerusalem from the East to greet the new King of the Jews, having observed the nova that predicted him, the sitting king tries to enlist them as spies. Herod sends them to Bethlehem, the city identified by his own experts as the royal birthplace. The Magi follow the star there and bring expensive gifts. Then they return home by another route after a dream warns them not to return to the jittery Herod, who feels duped by them and enraged because the infant has escaped. He orders the killing of all the boys in the Bethlehem area under the age of two, "according to the time that he had diligently inquired of the Magi."[11]

Although their visit ends with a slaughter of innocents, the Magi themselves are skilled, prudent, and generous astrologers, honored as three wise kings by later legend – wise enough to honor a new king and a new creed. Nonetheless, readers of the Christian scriptures in Greek were meant to take *mageia* and its cognates as pejorative. In Acts, when the Apostle Philip encounters competition in Samaria from "a man named Simon," the main threat is Simon's false teaching (later diagnosed as Gnosticism by heresy-hunters and scholars), but the first charge made against him is that he "had captivated the Samaritans with his magical arts." He is a boaster, however, quickly defeated by the apostles. He loses his hold on Samaria and submits to baptism, cowed by the "miracles that were taking place." The Apostles were doing counter-magic, legitimated by the Gospel stories that enumerate wonders worked by Christ to prove that he is the Messiah. As for Simon, he may have been a third-rate Magus, but the author of Acts never calls him a fake.[12]

The new church was quick (but not alone) in insisting that its true miracles were no magic – a crucial but shaky distinction. Known by other names, similar practices were already culpable in the Hebrew Bible, where Moses defeats Pharaoh's wizards, witches are not allowed to live and a donkey gets the best of Balaam, a heathen seer. Yet the pagan Balaam is wise enough to predict that "a star will come out of Jacob," the same star that guides the Magi of Matthew's Gospel. And how did Moses overcome Pharaoh's tricksters? The author of Acts says that he knew "all the wisdom of the Egyptians and was powerful in his words and actions." That reputation linked the name of Moses with Greek pseudepigrapha

Figure 11. Simon Magus Flying with Demons, c. 1170.
(J. Paul Getty Museum, MS. 64, fol. 138v)

on magic and led Pliny to list him after Zoroaster as the founder of "another sect of magic."[13]

That Jews, Christians, and pagans were confused about magic and religion is not surprising. What is magic, if not a reflex of religion? Having no essence, is magic just an evil said of someone else's religion, one of those faults that the religious subject attributes to its adversaries? As an orthodox theology needs heresy in the domain of theory, in order to define what it claims not to be, perhaps pious worship needs magic in the domain of practice – and the deviant practice will need explaining by a deviant theory, so that religion can never eliminate magic or silence it.[14]

But human armies can destroy one another. In 472, shortly after the final defeat of Xerxes at Plataea, Aeschylus – who had fought the Persians himself – wrote his *Persians* to commemorate the Greek victory and produce propaganda for Athenian democracy against Medizing tyranny. In order to make the Greek triumph dramatic, Aeschylus mythologized the events that Herodotus would present as history. The word 'barbarian'

first enters the Greek language in his play, spoken ten times there, among other names of people and places that mimic the Persian speech that sounded so bizarre to Greek ears. Among "the flower of Persia's fallen" were "Magos, Arabos, Artabes the Bactrian" and other foreigners demonized as cruel, credulous, decadent, autocratic, and hysterically emotional.[15]

Medes are prominent in the play's genealogies of contemptible aliens, but Aeschylus has nothing concrete to say about the actual Zoroastrian faith that the Magi brought to Persia, even though divinities, not military might or human cunning, control the story. A Persian messenger reports that "one of the *daimones* destroyed our army, … [and] the gods have saved the city of the goddess Pallas." The Persian Queen, a royal necromancer, pours a libation to raise the ghost of Darius and tell him the sad tale of wars in which Persian troops defiled the holy places of Greece. There is alien religion – dark and impious – in the play, but it is just an empty vessel for Greek fear and hatred. That was also how the Greeks invented *mageia*, by first inventing the barbarian to whom magic belonged as an anti-religion without much content.[16]

Since Greek religion was mainly civic, politics itself, and hence warfare, were always religious to some degree. But some religion happened outside the *polis*, and some of that was alien, like the rites of the Magi that Greeks encountered or imagined after the Persian Wars. When the Magi are priests, and not just scoundrels, in the eyes of Herodotus, Xenophon, and Plato, they serve a good religion valued highly by the Persians: its purpose is to behave piously toward the gods, and its secrets are kept holy for a greater good. But for Heraclitus, Sophocles, and (in a different mood) Plato, the religion of the Magi is despicable and evil: it aims to hurt people by manipulating forces that can harm as well as heal, and its secrets are selfish and malicious.[17]

Who were the gods of the Magi – as seen by the Greeks? A fourth century papyrus calls them *daimones* and souls of the dead. What were their rituals? Euripides calls them "barbarian songs." The barbarians whose vile rites honor spirits and ghosts have lost their ethnicity, however; they are now just generic aliens whose religion, by the usual civic norms, must be wrong simply because it is alien. But there is little evidence of legislation against *mageia* from the classical period; magic seems not to have been a pressing civic issue for the Greeks. Only a few artists and specialists, like Empedocles and the author of the treatise *On the Sacred Disease*, kept up the conversations that used an older native terminology to fill out their contending accounts of the Magi: 'faker' (*agurtês*), 'sorcerer' (*goês*), 'diviner' (*mantis*), 'spell' (*epôdê*), 'drug' (*pharmakon*), and others.

Two key oppositions that put *mageia* on the negative side of the debate were piety/impiety and honesty/fakery.[18]

Although the Greeks theorized about magic before they made laws against it, the Romans went the other way. The very early Twelve Tables forbade evil spells (*carmina*) and chants (*incantationes*), especially those that could ruin a farmer by whisking his crops off to a neighbor's field. *Carmina* can be good or bad, however: they can heal as well as hurt. But the murder by poison or other mysterious means (*veneficium*) outlawed in 81 BCE was always a crime. On the other hand, official measures were taken to keep some mysteries legitimate and under the state's control. The government paid specialists to decipher messages from the gods encoded in lightning, thunder, flying birds, and the entrails of sacrificed animals: the technology of divination was as threatening to generals and politicians as it was irresistible. And Stoic philosophers made divination and astrology respectable.[19]

The Romans had put all this in place before Cicero and Catullus introduced *magus* and *magia* into the learned Latin vocabulary, where at first those words applied to Persian religion and then to exotic rites in general – love charms were a favorite – so that 'magic' came to name the genus of which spells, chants, omens, auguries, and other such items were species. By analogy with *veneficus*, the word *maleficus* or 'evil-doer' entered this lexicon more than two centuries later, at first as a synonym for the pejorative *magus*, and only later as the word that Christians would use for 'witch.'[20]

By the time of Pliny the Elder, when most educated Romans had been thoroughly Hellenized, the Latin *magia* was synonymous with the Greek abstraction, *mageia*. Pliny opens book 30 of his *Natural History* with the most influential account of magic written in Latin before the Renaissance, inserting it into a long discussion of natural substances used in medicine. Many of his recipes had been recommended by Magi, though Pliny will try them only when nothing else works. Right at the start he calls them "silly lies" and says that the craft that relies on them is "the most fraudulent of all."[21]

Magia for Pliny is fake medicine that claims religious authority and divinatory power – since healers often need to prognosticate. It is a corruption of astrology, religion, and medicine traced to Persia and Zoroaster – not the historical prophet, however, but the arch-magus whose immemorial age was enough to make him exotic. By extension, the same arcana belong to the witches of Thessaly, the Druids of Gaul, the stargazers of Chaldaea, and all the other outlandish wizards. Their jawbreaking names evoke faraway places and unintelligible languages

that contain unutterable words of power – *arrheta*, ancestors of the 'occult' powers of later magical theory that would be *unseeable* rather than *unsayable*. When exile drove sages like Pythagoras and Democritus to the remote regions where such speech was heard, even those wise philosophers were befuddled by it.[22]

2 ANCIENT PHILOSOPHY

Apuleius, well educated in Platonic philosophy, displayed his credentials to defend himself in court against charges that he had used magic to seduce a rich widow in a provincial African port, where the locals were not impressed by a stranger's book-learning. He went to trial with three arguments: that his suspect activities were actually scientific research and connoisseurship, not magic; that if he had been doing magic, it must have been the good kind, not the bad kind in the indictment; and that he was a philosopher, one of those sages whom the ignorant are always quick to slander. If we believe Apuleius, only the uneducated use magic to do evil, while the only good magic is philosophical.[23]

Plotinus, born in Egypt in 205, a few decades after Apuleius died, was a better philosopher. He established the tradition – Neoplatonism – that first explained the philosophical basis for belief in magic that Apuleius only mentions. Although Plotinus himself was once attacked by a magic spell, which he swiftly bounced back at his assailant, he has no interest in magical technique, dismissing it as a distraction from philosophy. But he thinks of nature itself as magical, filled with divine powers that are always already there, ready to be activated by the magus who knows how to switch them on. Porphyry, a student of Plotinus, has similar reservations about practicing magic, though he never doubts its reality.[24]

Iamblichus, next in the Neoplatonic lineage, turns his full attention to theurgy – literally, 'god-working' – as a way to ascend to the divine by first bringing a god down into a material receptacle here below. Behind this magical technology are metaphysical principles and cosmological structures. The cosmic and hypercosmic hierarchy is arranged in 'series' (*taxeis*) so that, for example, a scorpion carved on an amulet belongs to a series that includes the earthly arachnids – both natural and artificial – but rises beyond them to a supercelestial divine Scorpion and many others in the grades of being in between, one of them the Scorpio seen among the constellations. Knowing where the celestial and supercelestial Scorpions live, the magus will also know which things within reach are like them and which are not – things to call the gods down or fend them

off: stones, plants, colors, odors, tastes, sounds, and so on that resonate sympathetically with the divine or drive it away by antipathy.[25]

Proclus, the last of the great Neoplatonists who wrote in Greek, left a summary of this ancient theory of magic, *On the Priestly Art According to the Greeks*, which survives only in a digest. By the time he died in 485, the pagan gods had all but succumbed to the one Christian deity, and Christians despised the old gods as demons. They also promoted the unimposing Adversary of the Hebrew Bible to the lordship of Hell, empowering their Satan to command hosts of unclean spirits and, eventually, unleash them on the poor and powerless people who were the main victims of witchcraft persecutions. Thus, in the bad dreams of Christians, the *magus* had finally turned into the *maleficus* who – by biblical command – could not be allowed to live. Sadly, all this was compatible not only with the theology that educated Christians professed but also with the cosmology that they inherited from classical teachers.[26]

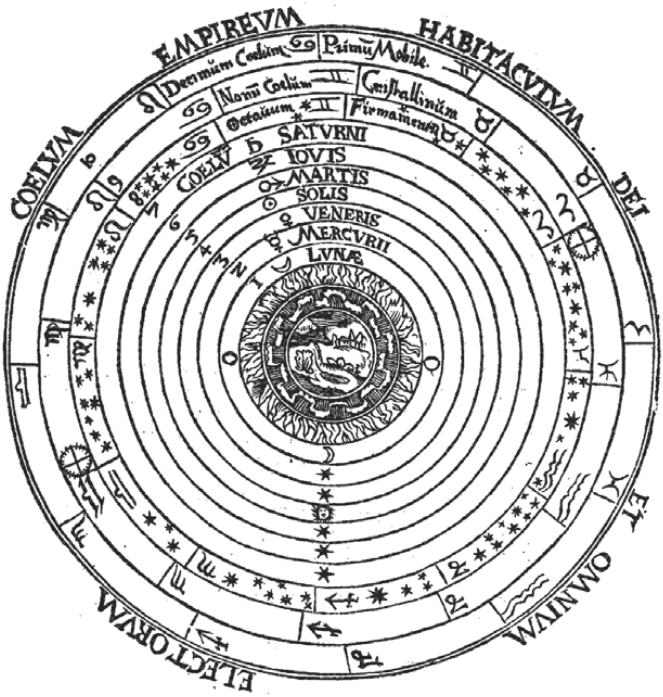


Figure 12. Concentric Spheres.
(Gemma Frisius [1540], fol. V[v])

The cosmos of Aristotle and Ptolemy is a mechanism of nested concentric spheres where causality moves from outside to inside – above to below from a terrestrial point of view. The heavens in between God and the bottom of the cosmos, where humans live, conduct this power through constellations and planets that resemble living things and have souls and minds. Although the stars that Aristotle calls gods had to be a worry for Christians, the discomfort was not enough to discredit the cosmological framework, which provided physical and metaphysical foundations both for astrological divination and for magic that relies on celestial influence.[27]

The Christian authorities were always anxious about magic, some of them going as far as Augustine when he condemned any use of amulets – even if they carried no messages – as an invitation to demons. But no one could do without the cosmology that sustained belief in magic, not even a hero of orthodoxy like Thomas Aquinas, who wrote a eucharistic hymn praising "the bread of angels that becomes human bread." The Angelic Doctor, since he had to believe in angels, also believed in demons as their hellish counterparts. He also thought that stars are ensouled, and he wrote a little treatise to explain how natural magic operates in the world. One basis of his convictions was Aristotelian and philosophical, including such technical metaphysical doctrines as the hylemorphic theory of qualities and substantial forms. As philosophers and theologians, almost all the scholastics – even those who disagreed with Aquinas – shared his reliance on Aristotle's capacious and tightly structured system. Hence, the philosophical authority that ratified key items of Christian dogma and ritual was the same eclectic Aristotelianism whose physics and metaphysics underwrote magic as well.[28]

The doctrine of the eucharist required believers to accept that objects on the altar which look, feel, smell, and taste like bread and wine are actually – because of words said and things done by a priest – the body and blood of Christ. But flesh and blood manifestly retain the qualities of bread and wine in a sacramental miracle of which transubstantiation is as good a philosophical account as could be had. The notions of substance and quality needed for this theory are the same ones that make philosophical sense – as much as could be made – of magical transformations, treating them as effects of special qualities called 'occult.' 'Hocus-pocus' may not have been coined by Protestants to mock the words of consecration – *hoc est enim corpus meum* – though that was what the Archbishop of Canterbury preached in 1694: "those common juggling words … are nothing else but a corruption of *hoc est corpus*, by way

of ridiculous imitation of the priests of the Church of Rome in their trick of transubstantiation."

Demons who tempt the faithful with magic and turn them into witches are angels gone to hell. Enthroned at the other end of Aristotle's cosmos, the providential Christian God is a Creator and First Mover who works through the stellar and planetary spheres to cause motion, generation, and corruption below on earth, which explains how astrology works without demons, allowing for a natural magic reinforced by astrology. In light of such features of the prevailing cosmology, and of their consecration as Christian doctrine, educated Europeans accepted magic, astrology, witchcraft, demonology, divination, and so on as normal beliefs in the Middle Ages and long afterward.[29]

3 ANTHROPOLOGY

At this point in magic's strange story, it will be timely to note two things: first, we have come a long way from Persian fire-worship; second, we are even further from anything 'primitive.' What justified magic for medieval and early modern intellectuals was a sophisticated construct built on classical precedent in late antiquity. This is not to say that 'popular magic' or 'folk magic' was unknown or unimportant, then or ever. But it does mean that the 'magic' in such phrases can only be our own 'etic' or observer term – not, for example, the 'emic' use of 'magic' by Porphyry or Pietro d'Abano when they spoke about their own beliefs.[30]

Etic 'magic' might be anybody's, in principle, including the people that Tylor and Frazer called 'primitive.' Why not study them to shed light on the beliefs and practices of other people – the Greeks, for example? That was Jane Harrison's thought when she wrote before World War I that

> in primitive days in Greece, as in Persia, magic had to do, if not with divinities (θεοί), yet at least with things divine, with sanctities (τὰ θεῖα), and … magic was assuredly part of the necessary equipment of a king (τὰ βασιλικά)….We [also] have to deal with the manipulation of sanctities by the tribe or … the medicine-man….The attitude towards *mana* is a two-fold one, the positive attitude which is magic, the negative which is *tabu*.

According to Harrison, "we know that certain 'magical practices' survived among the Greeks" of later periods. It remains only to link *mageia*, the loan-word applied to those practices, with the native evidence from "primitive days in Greece" that will then lead to magic's true nature.

From ancient Thessaly to the modern Trobriand Islands, magic of the etic kind will be all around, across the millennia. The term 'magic' will then join 'art,' 'science,' 'religion,' and other constants of the human condition. And the same term will be exalted by association with classical Greece. It will no longer be the business of "ignorant old women, hole and corner charlatans, or lovers insane through passion" contrasted by Harrison with the archaic Greek magic that was nobler, regal, and sanctified, and yet primitive. And the primitive itself will have been ennobled.[31]

Hearing this attractive story, now a century old, it is hard to exaggerate the moral force of the classical ideal that guided Harrison and Frazer. It was Frazer, after all, who tried to resign his Cambridge fellowship when a reader discovered an error in his translation of Pliny. Despite the ethical imperative, however, and even though no account of magic has had more readers than Frazer's *Golden Bough*, the story breaks down if we apply the etic 'magic' of Tylor, Frazer, and Harrison – which is still the standard model for educated non-specialists – to Avicenna, Albertus Magnus, or Marsilio Ficino. As a practical matter, given the slim evidence, it is hard to say what magic the chiefs and shamans of archaic Greece may, or may not, have had in common with 'primitive' people studied by Malinowski, Evans-Pritchard, and other early anthropologists. What those two groups could not possibly have had in common is clear enough, however: the philosophical and other remains of classical antiquity that gave medieval and early modern intellectuals reason to believe in magic.[32]

4 RENAISSANCE PHILOSOPHY

During the Renaissance, the philosophy that sustained belief in magic grew even more refined than it had been in the Middle Ages. Ficino, the first to put all of Plato into a language that Western Europeans could read, was also a theoretician of magic. The third of his *Three Books on Life*, "On Arranging Life by the Heavens," was the most influential account of magic of its day, perhaps of all Western history: between 1489 and 1647 the book went through nearly thirty editions. In his philosophical account of magic, Ficino confirms the Aristotelian cosmology and much of the physics and metaphysics that the scholastics had accepted, but he also adds new material from the ancient Neoplatonists, especially the metaphysics of Plotinus and Proclus and the theurgy of Iamblichus.

Although Ficino was nervous about his new philosophical magic, fearing what the church might say, he was too dazzled by his discoveries to suppress them. Instead, he worked hard to distinguish a legitimate natural

magic from the demonic kind. Since some magic was thought to work by invoking demons, which would always be sinful, the burden of a theory of natural magic was to exclude them, which Ficino thought possible if he used only natural things found everywhere on earth – stones, plants, vapors, and sounds – to make sympathetic connections with (or antipathetic defenses against) higher levels of the cosmos.

Ficino surely realized that his theory was flawed. The same Neoplatonic sages who convinced him that magic was real – Iamblichus especially – also showed that it was always divine. Magic could never really avoid the personal spiritual beings – gods for Iamblichus, demons for Christians – that Ficino needed to banish in order to keep magic natural. His anxiety on this point is evident when he mentions the *Asclepius*, a text ascribed to Hermes Trismegistus, in order to condemn its account of statue-making in the temples of ancient Egypt. Although the objects used to make the statues fit for the gods are natural, the images themselves are idols animated by demons. Hermes is a key figure in the mythic cultural history – the ancient theology – that Ficino derived from the Church Fathers. But the vague and erratic spirituality of the Greek Corpus Hermeticum, Latinized for the first time by Ficino, was of no help for constructing a philosophical theory of magic – which was Ficino's aim.[33]

Figure 13. Marsilio Ficino. (Florence, Biblioteca Medicea Laurenziana, Plut. 82.15, 1r)

While Ficino was reviving Neoplatonic magic and fitting it into his ancient theology, Giovanni Pico della Mirandola was adding Kabbalah as yet another piece of this syncretizing puzzle. Learned Jews had taught Pico that Kabbalah was part of the oral law. Besides the written law known to Christians as the Pentateuch, God had also given Moses an unwritten law passed down as *Cabala*, a Latinization of 'reception' or *Kabbalah* in Hebrew. Pico adapted Kabbalah to the theurgic magic of ascent that Ficino had discovered and made it part of a mystical discipline that rises to *henôsis* – union with God and annihilation of the self.[34]

Pico died in 1494, Ficino in 1499, eleven years before Henry Cornelius Agrippa von Nettesheim finished the first version of his manual *On Occult Philosophy*. Like Ficino's *Three Books on Life*, Agrippa's *Occult Philosophy* was still being printed in the seventeenth century, after Descartes had died and long after its first complete edition of 1533. Agrippa's book is a compendium of the many beliefs, practices, and phenomena thought at the time to be based on or explained by theories like those that Ficino and Pico had proposed. After summarizing the theory, Agrippa catalogs the results: astrology, including astral and talismanic magic and medical magic; theurgy, sorcery, necromancy, and the evil eye; oracles, prophecy, divination in its many varieties, including oneiromancy or dream-interpretation, and also lots; the magic of names, words, letters, charms, spells, chants, and curses; numerology and the magic of numbers, figures, signs, seals, characters, and images, including the letters of Latin, Greek, and Hebrew; the magic of music and sound; demonology, angelology, and the magic based on them; and Kabbalah.

Between the covers of this one large volume Agrippa put whatever had come to seem 'magical,' sometimes in the etic sense, to educated people of his day. But because Agrippa also inherited an emic 'magic' with a classical pedigree, the reader of his book encounters thousands of Greek and Roman people, places, ideas, and words – the fragments of an ancient lexicon of magic. Agrippa's magic had been classicized, in other words, at a time when an expansive new culture tried to classicize everything that it respected and much that it feared. And Agrippa gave it a new name, the 'occult philosophy' that would eventually become 'occultism' in the nineteenth century, the seed-time of many -isms.[35]

During the sixteenth and seventeenth centuries, Pietro Pomponazzi, Girolamo Cardano, Giambattista Della Porta, Giordano Bruno, Tommaso Campanella, Robert Fludd, Athanasius Kircher, Henry More, and many, many others kept searching the ancient ruins for traces of magic. But the same curiosity that tempted Ficino (or his patron, Cosimo de' Medici)

to stop work on Plato for a few months in order to translate the Greek *Hermetica* led others toward a more critical philology which, by the early seventeenth century, put new weapons in the hands of debunking scholars whose target was credulity about the classics. In 1614, Isaac Casaubon concluded from linguistic data that the *Hermetica* could not be records of anything as old as Ficino's ancient theology.[36]

Breakthroughs like Casaubon's did not stop the literate public from believing – or wanting to believe – in magic. Far from it. During the century of Galileo, Descartes, Hobbes, and Newton, the market for magic books continued to boom, and it still thrives today. Nonetheless, in the age of the new science – and a new philology – magic became so disreputable for intellectuals that ambitious scholars and scientists avoided it, or attacked it, more than ever before. The key change was the collapse of another classical construct – Aristotelianism. Without the cosmological framework and metaphysical foundations of that comprehensive system, magic became incredible to critics who mostly ignored its debts to Neoplatonism. Since the ideas that meant so much to Ficino's magic had no secure place in the universities where Aristotle ruled, Neoplatonism mattered little to the professional philosophers opposed by Descartes and other innovators.[37]

5 CLASSICISM

After the seventeenth century, when philosophy and philology turned Europe's high culture decisively against magic, the ancient classical tradition had not much left to give to the modern occultist tradition – as Agrippa had presented it. But more was to be heard from specialists on the classics who followed Casaubon and his learned predecessors. While magic was being ejected from conventional natural philosophy and metaphysics, it popped up again in the new fields of classical philology and history of religion. One of the demons that possessed the antiquarians and the acolytes of *Altertumswissenschaft* was a compulsion to cover the classics exhaustively. Every scrap of ancient evidence, on every topic, had to be recovered, preserved, and studied – even magic. Scholars who held magic in contempt as a primitive delusion still insisted on tracking it down. To some extent, this was just the logic of textual recovery playing itself out: for every Plato, there was a Proclus; for every Aristotle, an Apuleius; what was good for the Younger Pliny must be good for the Elder; find me a *Constitution of Athens* at Oxyrynchus, and I'll find you a magical papyrus in the same place.[38]

Many of the authors had been names to conjure with for centuries, but philologists also added new items to the library of Western arcana, especially by finding and deciphering papyri and archaeological remains. The *Catalogue of Greek Astrological Manuscripts*, the *Collection of Greek Alchemists*, the *Greek Magical Papyri*, and other such projects uncovered whole libraries that had been unknown when learned magic last seemed respectable – during the Renaissance. Much of the scholarship that guided this frenzy of hunting, gathering, and assembling was dry and positivist in its inspiration. Some experts loathed the magical texts that they read and interpreted so skillfully. Housman told a friend that Manilius was "a facile and frivolous poet, the brightest facet of whose genius was an eminent aptitude for doing sums in verse." His opinion of his own calling was also low: "assuredly there is no trade on earth, excepting textual criticism, in which the name of prudence would be given to that habit of mind which in ordinary life is called credulity."[39]

The mixed feelings are no surprise: it was hard at first to reconcile the discoveries of modern archaeology and papyrology with the refined magical cosmologies preserved in the older philosophical tradition. The spirit of many newly recovered documents, whatever the texture of their language, was distinctly demotic: the spells and recipes that Dieterich studied and Preisendanz collected in the *Greek Magical Papyri* seemed not to come from the same ancient world where Ficino had found his elegant Neoplatonic metaphysics. But in 1922, just two years before Preisendanz published his first volume of magical papyri, Malinowski made his name with the *Argonauts of the Western Pacific*, his classic account of the Trobriand islanders, followed in 1925 by an influential study of magic, science, and religion. Here was more evidence that if modern primitives made etic 'magic' (observed by Europeans) function effectively as part of complex cultural systems, the same analysis might apply to the emic 'magic' (theorized and practiced by Europeans) of the papyri and other ancient texts. The influence of anthropology on the study of magic as part of the classical tradition has been deep and enduring: contemporary authorities like Walter Burkert and G. E. R. Lloyd think and write in anthropological terms. But the outstanding case of mutuality between the classics and anthropology is still Frazer's *Golden Bough*.[40]

Frazer opens his interminable story seductively, with the famous tale about priests called kings, doomed to be assassinated but kept safe by a sacred tree – as long as the tree lives. "In early society," he explains, "the king is frequently a magician as well as a priest; indeed he appears to

Figure 14. Bronislaw Malinowski with Trobriand Islanders around 1918. (Mary Evans Picture Library)

have often attained to power by virtue of his supposed proficiency in the black or white art." For the kings of the sacred grove, the most vital magic is the kind that Frazer calls "sympathetic," identified as one of "the principles of magic ... in all ages and all countries." To analyze the application of such principles, he constructs a taxonomy, beginning with "homoepathic or imitative magic" as a type of the sympathetic kind.

"Thousands of years ago," he continues, magic of this kind "was known to the sorcerers of ancient India, Babylon, and Egypt, as well as of Greece and Rome, and ... is still resorted to by cunning and malignant savages in Australia, Africa, and Scotland." He then piles case history upon case history from North and South America, Sumatra, New Guinea, Malaysia, Borneo, the Torres Straits, the Central Celebes, the East Indian islands of Saparoea, Haroekoe, and Noessa Laut, from the Warramunga and Arunta of Central Australia, from a Cambodian hunter, from people closer to hand in Bulgaria and among the Bosnian Turks, and even from "our Scottish Highlands." Part and parcel of the same barrage of data are

reports from Pliny, Plutarch, and "Marcellus of Bordeaux, court physician to Theodosius the First, in his curious work on medicine."[41]

With so much data on the table, students of Greco-Roman magic could make what they liked of it, and so they did. Magic could be appreciated as popular religion (or science) or depreciated as deviant religion (or science). If it was a product of syncretism, the forces in play might be either creative, leading to new horizons of the spirit, or corrupt, ending in miscegenation. In any case, if magic was distinctly primitive, it ought to be a terminus from which evolution advances to something better, leaving scholars to quarrel about where the improvement might be located – inside ancient culture or outside it: the primitive as exotic is someone else's strength or weakness, and as arcane it is someone else's secret.

Any such option that survived had to be placed not only within a taxonomy of magic, like Frazer's, but also within a larger taxonomy of culture, with magic usually related antithetically to religion and/or science. The ghosts of Hegel and Comte cheered as the debate raged. Was magic marked by the opposition between heteronomy and autonomy? Or was it between the irrational and the rational? Supernature versus nature? Manipulation versus submission? Performative versus assertoric? Perhaps theory versus practice, the last resort of the taxidermy of ideas. While deciding these undecidable questions, modern students of ancient magic produced not only scholarly monuments, like the *Greek Magical Papyri*, but also masterpieces of interpretation. The most memorable is the work of Aby Warburg, the name-saint of the Warburg Institute and therefore a patriarch of the classical tradition in its modern dispensation.

6 WARBURG

When the *Golden Bough* was still a new book, Warburg read Franz Boll's *Sphaera*, a notable application of advanced philology to the newly recovered evidence about ancient astrology. Boll's book inspired Warburg to decode the decan images invented by ancient Egyptian priests, mixed with zodiacal signs by Hellenistic astrologers and transmitted to medieval and Renaissance readers in grotesquely mutated forms. The spherical geometry of the Egyptians was clear, but the associated imagery became opaque as the night sky shifted over the centuries. Passing time and failed memory distorted the decan images in very odd ways.[42]

Warburg thought that Giovanni Pico must have seen a striking record of the old images painted on the walls of Schifanoia, a palace in

Ferrara near Pico's estates and owned by a family friend, Borso d'Este. He also knew that in his late and unfinished attack on judicial astrology, Pico had denounced "the absurd Arabian doctrine of the decans. It is understandable that a Renaissance man, on finding these astrological specters walking abroad in his own family circle, should have taken up arms against so barbaric a combination of idolatry and fatalism." On the other hand, Warburg also knew (from Burckhardt) that Pico had written in praise of magic and Kabbalah only a few years earlier.[43]

Genius in the service of magic was not so much a paradox for Warburg as a predictable betrayal – treason all-too-human in what Burckhardt had called "the struggle fought by the clear Italian spirit against this whole web of delusion," a campaign conducted despite "the great monumental glorification of astrology … in Borso's summer palace." It was from Burckhardt that Warburg inherited the capacity to see historical agents as merely inconsistent or irresolute where others saw contradiction. However, since the Burckhardt who hailed Pico for producing "the loftiest intuitions … about the dignity of man" also saw occultism as

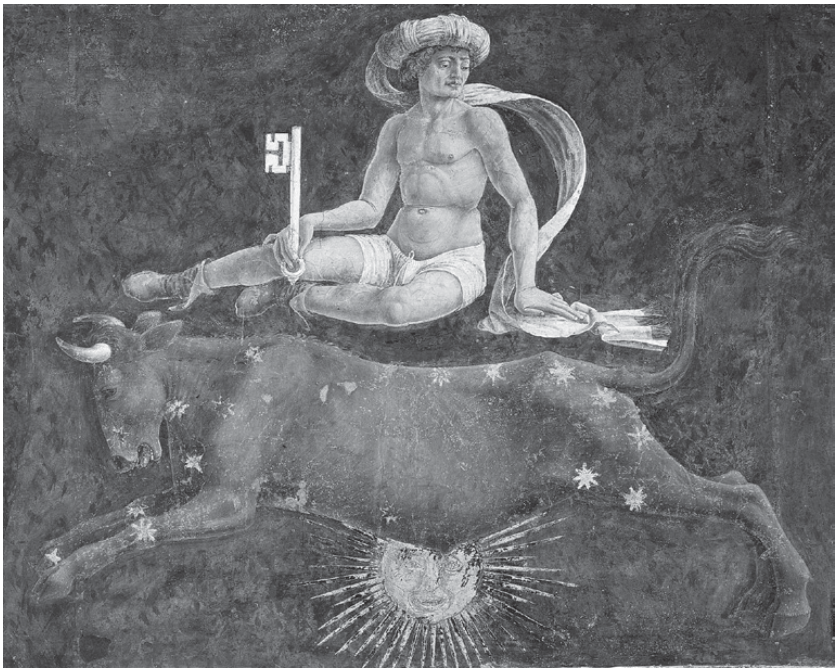


Figure 15. April Decan with Taurus and the Sun, Palazzo Schifanoia, Ferrara, c. 1470. (Art Resource)

decadent, full appreciation of Pico's magic would strain even Warburg's forbearance.[44]

Warburg, who wanted a humanism purged of superstition but doubted that possibility, ends his famous essay on the murals of Schifanoia with the claim that

> the grandeur of the new art, as given to us by the genius of Italy, had its roots in a shared determination to strip the humanist heritage of Greece of all its accretions of traditional "practice," whether medieval, Oriental or Latin. It was with this desire to restore the ancient world that "the good European" began his battle for enlightenment, in that age … that we – a shade too mystically – call the Age of the Renaissance.

Enlightenment requires not just a rebirth of ancient wisdom but also its cleansing. Yet Warburg's ironic use of Nietzsche's phrase suggests a darker conviction: that history always thwarts the good European's desire for disenchantment.[45]

Ernst Cassirer summarized Warburg's thinking about magic and astrology in a few dense lines: "Warburg has shown from its history," he wrote, "that astrology … presents a double intellectual front. As a theory, it seeks to place before us the eternal laws of the universe in clear outline; whereas its practice stands under the sign of the fear of demons." What Warburg called the "de-demonizing process" was the great step taken by the Renaissance toward the modern world, which meant turning away from an older, magical worldview grounded in the classics.[46]

Warburg studied cultural history and art history from the perspective of psychology, anthropology, and evolutionary biology as they were taught in the late nineteenth century. His project was a grand theory of social memory to explain the persistence and transformation of images since antiquity. Comte's ideas about stages of human development came to him as a student in Bonn. Although he respected Burckhardt, he despised Burckhardt's vulgarizers, especially those who beatified the free Renaissance individual and gave the impression that mankind's escape from the primitive was simple and easy. Warburg saw the task as always incomplete: the civilizing process is never a linear advance but a perpetual oscillation between magic and logic in which "Athens has constantly to be won back again from Alexandria."[47]

In a "phobic reflex" primitive people had suppressed their terrors by making concrete images of them, surrogates to manipulate and replicas to subdue with ritual: thus, "celestial bodies were visualized in human

form in order to limit their daemonic power." Fascination with primitive cultures caused Warburg to travel in 1905 to "prehistoric and 'wild' America," going all the way to Arizona in hopes (disappointed) of seeing a Native American snake-dance. But it is the menace of Europe's old gods that haunts his prose:

> The astral deities were faithfully transmitted through a long migration from the Hellenistic world by way of Arabia, Spain and Italy to Germany (where after 1470 they enjoyed a peripatetic Renaissance).... They lived on as time gods, ... beings of sinister, ambivalent, and indeed contradictory powers: as star signs they expanded space, marking the way for the soul's flight through the universe; as constellations they were also idols, with whom, as befitted the childlike nature of man, the mere creature might aspire to mystic union through devotional practices. The astrologer ... accepted these opposite poles of mathematical abstraction and devout self-association ... as the pivots of one vibrant, primordial psychic state. Logic sets a mental space between man and object by applying a conceptual label; magic destroys that space by creating a superstitious ... association between man and object. In ... the astrologer's mind, these two processes act as a single primitive tool that he can use both to make measurements and to work magic.

Ideal humans would have marched straight from reflex to reason, but real people always shuttle between magic and logic, concrete and abstract, personal and conventional, rising from embodiment to detachment and sinking again from mathematics to religion, never finally securing the scientist's desired distance or the artist's poise.[48]

The role of images in this work is mediating and bivalent; they are channels of energy that can illuminate or obscure; they externalize and sublimate fear in artistic conventions or immerse and concentrate it in human persons. The magical images to which Warburg returns again and again are those of the pagan gods which, reflecting Burckhardt's view of late antiquity, he sees as deformed and degraded in that age, having lost their noble Hellenic forms and reverted to clumsy fetishes. Two of Warburg's major works – of the few that he published – describe the liberation of the older gods during the Renaissance, their escape from the bad dreams of medieval astrology and their return to Olympian serenity. "In the transitional age of the early Renaissance," he argues,

> pagan-cosmological causality was defined in classicizing terms through the symbols of the gods; and these were approached in due proportion to their degree of saturation with human quality; from a religious

Figure 16. A Good European with a Native American: Warburg and a Hopi Dancer in Arizona, May 1896.
(Guidi and Mann [1998], p. 142, pl. 80)

> daemon-worship at one extreme to a purely artistic and intellectual representation at the other.

Warburg sees this struggle recorded in Borso's palace and in the pamphlets of the Reformation, especially the woodcut propaganda that fueled debate about the date of Luther's birth and its purported coincidence with the great celestial conjunction of 1494. He regards astrology – with its images of astral gods – as a shifting weight on the delicate scales of culture: even horoscopic figuring and fanciful celestial geometry need rational calculation to free the mind from the star-demons and their terrors, or the reverse. Hence,

> in astrology two entirely antithetical mental forces … combine to form a single "method." On one side is mathematics, the subtlest operation of the abstract intellect; on the other is the fear of daemons, the most primitive causative force in religion. The astrologer … is gripped, as he pores over his mathematical tables, by an atavistic and superstitious awe

> of those very star names that he wields like algebraic formulas; to him, they are daemons, of which he lives in fear.

If some took the high road to reason, others lost the straight path. The learned Melanchthon is a dupe in Warburg's drama because bad astrology seduced him, whereas the cruder Luther knew absolutely (though not scientifically) that astrology is the devil's tool and unrighteous: "your art is crap," he snorted. It was Raphael and Dürer who saved the old gods with a sublime, aesthetic grace – especially Dürer, who engraved the reflective angel who stares from his magical *Melencolia I*.

> Its consoling, humanistic message of liberation from the fear of Saturn ... can be understood only if we recognize that the artist has taken a magical and mythical logic and made it spiritual and intellectual. The malignant, child-devouring planetary god ... is humanized and metamorphosed ... into the image of the thinking, working human being.... Debased, repellent planetary spirits contending for the control

Figure 17. Albrecht Dürer, *Melencolia I*, 1514. (Art Resource, from New York, Metropolitan Museum of Art, 43.106.1)

> of human destiny … are reborn into a classical language of form; and yet their Hellenistic-Arabic travels have left them bearing the marks of subjection to fate.

Dürer's age, according to Warburg, was also Faust's, when "the modern scientist … was trying to insert the *conceptual space* of rationality between himself and the subject." But science and art always leave this quest for reason unfinished, moving Warburg to describe the objects of his research as the "unread records of the tragic history of freedom of thought," which he tries to explain by deciphering magical images passed down from antiquity. His abhorrence of magic as primitive and of astrology as fatalist reflect a Kantian wish to rescue the moral agent from a determined state of nature – making a strong philosophical bond between Warburg and Cassirer.[49]

Frances Yates, who spent her whole splendid career at the Warburg Institute, was no more a philosopher than Warburg, but her work also shows traces of Cassirer's Kantian morality. Near the end of her celebrated study of Ficino, Pico, and Bruno, Yates claims that modern science emerged after the Renaissance from "a new direction of the will towards the world." "The real function of the Renaissance Magus," she declares, "is that he changed the will. It was now dignified and important for man to operate … and not contrary to the will of God that man, the great miracle, should exert his powers." The world-engaging will finally prevailed in "that momentous hour … [when man] first began to tread securely in the paths which have since led him unerringly onwards to that mastery over nature in modern science which has been the astonishing achievement of modern European man."[50]

Yates, Cassirer, and Warburg could all have agreed with Kant that "mastery over nature in modern science" is a great civilizing force, but for Warburg the course of civilization is far from unerring, as shown by the fortunes of ancient magic. In Warburg's view, culture always wavers between reason and unreason, between disciplined will and emotional panic. Although Yates shared Warburg's goal of understanding the afterlife of the classical tradition, even finishing projects (the Valois tapestries) that he had started, her best-known book – which contains the best-known account of the ancient magic revived in the Renaissance – forgets Warburg's tragic sense of history in two ways: first, her story is a melodrama that ends happily in the bright dawn of science; second, Man the Magus is a conquering hero in her tale, conjuring up the modern world in a way less opposed to Warburg's dread of magic than oblivious

of it. She cites Warburg only twice in *Giordano Bruno*, on images of astral gods, and nowhere (to my knowledge) confronts his ideas about magic – so unlike her own.[51]

Without her ideas about magic, however, I would have none at all about that subject, though I have contested her claims about a 'Hermetic tradition' as the vehicle for explaining and practicing magic in Renaissance Europe. My views are closer to D. P. Walker's: his notion of 'spiritual and demonic magic' gives Ficino and his followers a place to stand theoretically, not just an authority to revere. Walker's account starts with music, mine begins with philosophy, but we get to the same place – more or less.[52]

PART II

MAGEIA

CHAPTER THREE

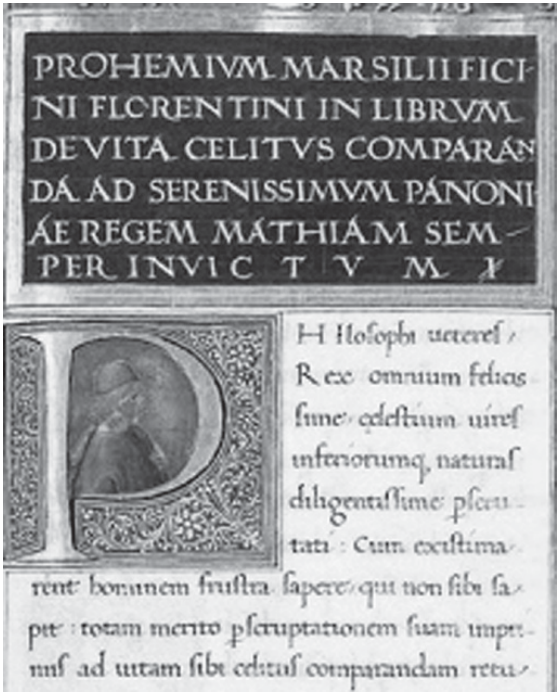
ANCIENT PHILOSOPHY IN FICINO'S MAGIC: PLOTINUS

It purveys spontaneously,
but it purveys also under spell,...
and the giver does not know of the gift.[1]

1 SEMINAL REASONS

Marsilio Ficino, author of the most important work on magic written in the Renaissance, was the leading philosopher of that era, so we should expect his approach to magic to be philosophical. But the refined and rational analysis required of philosophy in the Western tradition may seem wasted on magic if we take it to be primitive and irrational. In fact, the magic in the third book of Ficino's *Three Books on Life* (*De vita*) can be understood only in the context of two subtly reasoned philosophies – Aristotelianism and Neoplatonism – which are as far from being primitive or irrational as one can imagine. Ficino, who first put all of Plato into Latin, also commented on the master's dialogues in the Neoplatonic way, often borrowing from Aristotelian thought to do so. Those tasks made him the great pioneering Hellenist of his age, causing him to read and sometimes to translate and interpret Plotinus, Porphyry, Iamblichus, Synesius, Proclus, and other renowned voices of Neoplatonism. His Latin Plotinus, the first complete rendering in any language, includes commentary as well.[2]

What Plotinus says in *Ennead* 4.3.11 about cult-statues as receptacles for divinity corroborates the codicological and structural evidence that points to that passage as a starting point for Ficino's *De vita 3*. The topic of the first chapter of that book is intermediation among terrestrial, celestial, and supercelestial entities as a framework for astrological causation:


PROHEMIVM MARSILII FICI-
NI FLORENTINI IN LIBRVM
DE VITA CELITVS COMPARÁN
DÁ ÁD SERENISSIMVM PÁNONI
ÁE REGEM MÁTHIÁM SEM-
PER INVIC T V M

Philosophi uetere/
Rex omnium felicis
sime celestium uires
inferiorumq; naturas
diligentissime pscru-
tati: Cum existima-
rent hominem frustra sapere qui non sibi sa-
pit: totam merito pscruptationem suam impen-
nis ad uitam sibi celitus comparandam retu-

Figure 18. Ficino's *Three Books on Life* in Manuscript.
(Florence, Biblioteca Medicea Laurenziana, Plut.73.39, fol. 80r)

> By divine agency, the Soul of the World possesses at least as many seminal reasons of things (*rationes rerum seminales*) as there are ideas in the divine Mind, and with those reasons Soul makes the same number of species in matter. Thus, each and every species corresponds through its own seminal reasons to an idea, and often through this reason it can easily receive something valuable from on high since it was made from on high through this reason.... And surely if to a given species of things or to an individual in the species you correctly apply the many things that have been scattered but still conform to the idea, you will soon attract an extraordinary gift from the idea into the matter thus fitly prepared – through a seminal reason of the soul, of course.

The magus disposes earthly objects to receive heavenly powers by manipulating individuals and species of those lower items – species both taxonomical and metaphysical, belonging to a hierarchy of forms that reaches up through the heavens to the divine Mind. Ficino says that seminal reasons – intermediaries between Mind and lower bodies that bear some resemblance to the mediating Soul – are links between species in matter

and mental ideas. He also writes that *spiritus* joins man's soul to his limbs, just as the quintessence joins things in the cosmos to its soul.[3]

All of this, including the mention of *spiritus*, can be accounted for from the first eleven chapters of *Ennead* 4.3, read with Ficino's commentary on Plotinus. In his introduction to "Problems on the Soul," the ancient Platonist explains how souls

> by their succession are linked to the several Intellectual-Principles (*kathhekaston noun*), for they are the expressions, the Logos, of the Intellectual-Principles.... That Soul which abides in the Supreme is the one expression or Logos of the Intellectual-Principle, and from it spring other Reason-Principles (*logoi*), partial but immaterial.... Even the ultimate depth, neighboring with soul, may not go void of whatsoever degree of the Reason-Principle (*logos*) it can absorb.... Living in reason (*logos*), Soul ... communicates reason (*logos*) to the body – an image (*eidôlon*) of the reason within itself, ... and it bestows ...upon that material the appropriate shapes (*morphai*) of which it contains the Reason-Forms (*logoi*).... Each particular thing is the image within matter of a Reason-Principle (*enhulê logos*) which itself images a pre-material Reason-Principle: thus every particular entity is linked to that Divine Being in whose likeness it is made.[4]

Ficino found all of that in the first of the three courses that Plotinus taught about problems of the soul, but the rest of the main argument that opens the third book of *De vita* leads away from *Ennead* 4.3 toward *Ennead* 4.4 and Thomas Aquinas, whose teaching on the metaphysics of forms brings Christian legitimacy to the vexed question of talismanic figures (*figurae*). Higher forms, including figures in the heavens, generate lower forms in matter, according to Ficino. Soul makes both higher and lower forms through seminal reasons, and the lower forms are also produced through figures. The World-Soul

> out of its own reasons ... has constructed figures in the heavens in addition to stars ... and has impressed properties on all of them. In the stars – in their figures, sub-figures and properties – are contained all the species of lower things and their properties.... And from these highly ordered forms depend the forms of lower things, for these latter have been ordered from on high.... Thus, when the Soul produces specific forms and powers of lower things, she makes them through her own reasons, with the aid of the stars and celestial forms.

Although Ficino derives an astrologically operative substantial form and a quasi-substantial figure from St. Thomas, the very active seminal reasons that he discovers in Plotinus (and perhaps Augustine) are not at work in

Thomist metaphysics. Yet they are crucial for the argument of *De vita 3*, which ends by repeating what Ficino had said about forms and reasons at the beginning of the book. The World-Soul generates the forms of natural things through seminal reasons, which stay in contact with the Ideas. This is how Soul touches the matter that she had originally formed through the reasons. When the magus manipulates matter specified by forms and linked with reasons of a given kind, he gains access through those reasons to higher powers of the same kind. *De vita 3* begins and ends, then, with an analysis of reasons – *rationes* or *logoi* – taken from *Ennead* 4.3.[5]

At the end of *De vita 3,* Ficino also tells us that the philosopher who understands these intricate abstractions is "a person skilled in natural science and astronomy, whom we are rightly accustomed to call a magus." This philosopher is a magus not just because he needs additional, extra-philosophical information about astrology or natural history in order to follow the medical recipes in *De vita* but also because the basis of *De vita* in ancient philosophy is itself magical and astrological. In particular, Ficino learned from his Greek sources to treat celestial figures, forms, and seminal reasons as amalgams of metaphysical and astro-magical concepts – not a jumble of unrelated notions.[6]

Does this constellation of ideas – *schêma* for 'figure,' *eidos* for 'form,' *logos spermatikos* for 'seminal reason' – occur in the treatises on the soul by Plotinus? Yes, but not in *Ennead* 4.3. Instead, we find it in the last third of *Ennead* 4.4, where a prominent motif is elaborate punning on *schêma, schesis,* and their cognates; words of this family occur only three times in *Ennead* 4.3, but 4.4 uses dozens of them. This lexical evidence, in keeping with Ficino's philosophical case, supports the claim that the rich magical theory of the latter chapters of 4.4 is crucial for *De vita*. Another corroboration is that the argument of the early sections of 4.3 leads naturally to the final sections of 4.4.[7]

2 STATUES

Both these texts, the first eleven chapters of *Ennead* 4.3 and the last fifteen of 4.4, come from a collection of contested questions on the Soul that Porphyry divided into the third, fourth, and fifth parts of his teacher's fourth *Ennead*. The principal difficulties treated are Soul's faculties and its relation to other metaphysical and physical items. When Ficino interrupts his commentary on 4.3 at the eleventh section to theorize about magic, he correctly senses a break in content. The issue in the

ten preceding chapters is the World-Soul's relation to its body and to our souls. Section 11 introduces a new topic, the soul's descent, with the special case of animated cult-statues, which reminds Ficino of the god-making passages of the Hermetic *Asclepius*. Opening this section, Plotinus writes that "those ancient sages, who sought to secure the presence of divine beings by erecting shrines and statues, showed insight into the nature of the All," having made the points to support this insight in ten previous chapters on the metaphysics and cosmology of Soul and souls. Those chapters provide part of the material – reasons (*logoi*) as Soul's dynamic links between ideas in Mind and species in matter – for Ficino's presentation of psychic intermediation and astrological causation in *De vita* 3.1 and 3.26.[8]

For another part of his argument, which injects figures (*schêmata*) into this process, Ficino goes to the more strictly psychological chapters of the last third of *Ennead* 4.4. Memory is the faculty of Soul examined there. Plotinus asks if the efficacy of astrological magic and of prayer addressed

Figure 19. The God Anubis from Ptolemaic Egypt. (British Museum, EA47991)

to the divine celestials means that the gods remember petitions and respond to them intentionally. The answer is no, leading him to propose a different explanation for the effects of magic and prayer, which takes him back to the system (*suntaxis*) of psychic intermediation outlined at the beginning of the previous treatise. One result of the ensoulment of the cosmos is that all its members, sharing a common life, respond to one another without volition and across gaps of space and time. Commenting on *Ennead* 4.4, Ficino puts it this way:

> The heavens act on all these lower things not out of any intention to choose a particular thing or to act in a particular way, nor do they act only through corporeal qualities – namely, by heating or rarefying or the reverse. They act by certain natural powers of the soul that governs growth.... Therefore, to the extent that all corporeal objects are limbs of the cosmic animal, they are readily affected – sometimes by the whole, sometimes by one another – since even things that seem to be located far from one another are near by wondrous communion in a single nature.

Prayer and magic are artificial imitations of this greater natural wonder, the myriad organic sympathies in the fabric of the cosmos.[9]

While resolving problems about the soul, then, Plotinus gives Ficino three reasons to develop a new theory of magic adapted to a Christian Platonism: one comes from the metaphysics and cosmology at the beginning of *Ennead* 4.3 that sets forth the dynamics of Soul contemplating Mind yet operating on matter through seminal reasons connected with Ideas in Mind; another looks to the psychological material from *Ennead* 4.4 that explains magical sympathy by way of a complex metaphor based on various meanings of 'figure' (*schêma*) and its cognates; a third depends on the allusion to the magic of statues in 4.3.11.

Statues have no important role in the reasoning of the *Enneads*. In his most extensive statement on magic in 4.4.30 and following, Plotinus says nothing about them. Although Ficino clearly sees a connection between the statues in *Ennead* 4.3 and those in the *Asclepius, De vita* actually makes no productive use of this link. On the contrary, the references there to the statues of the *Asclepius* are either noncommittal or ambiguous and worried. Whatever doxographic or genealogical support this might give for a defense of magic, it does no good for a theory of magic. In fact, neither the Latin *Asclepius* nor the Greek Hermetic treatises known to Ficino have much to say about magic of any kind – theoretical or practical.[10]

If a philosophical treatment of the statues – based on Plotinus or the *Hermetica* or both – had seemed possible to Ficino, surely he would have said so, given the clear reliance of the third book of *De vita* on the eleventh chapter of *Ennead* 4.3. Instead, he starts and sustains the argument of *De vita 3* with philosophically richer material from Plotinus and other thinkers – Aquinas and Proclus, for example – whom he adapts to his reading of Plotinus.

The first eleven chapters of *Ennead* 4.3 discuss Soul's relation to body and to other souls. Soul brings *logos* as a principle of intellectuality to all levels of the cosmos, even the lowest, where forms languish in dead matter. Commenting on 4.3.10, Ficino explains that "because the whole texture of the cosmos and its form derive from universal Nature, there can be no resistance at all, especially since everything from then on depends from Nature in a series that follows from it." Immaterial Soul, neither divided nor limited by distance, is omnipresent to matter even though matter is fit to receive it only in a way that distinguishes one ensouled body from another.[11]

Still, it is not Soul, but matter variously apt for Soul, that is divided by the distinction between one ensouled being and another, and the ensoulment entails no intention in Soul, which is present to the whole material cosmos as water is present to a net stretched in the sea. Body, including the body of the cosmos, is just a consequence of Soul's procession from Mind. Nature, the aspect of Soul that does not remain entirely with Mind, brings the physical universe into being by carrying form and life to the dim margins of the All that Mind still illuminates. This is how statue-magic shows "insight into the nature of the All." "Soul is everywhere tractable," says Plotinus, but "its presence will be secured all the more readily when an appropriate receptacle is elaborated." This is what Ficino means by a "receptacle fit for soul," a notion he uses both in commenting on *Ennead* 4.3 and in writing *De vita*.[12]

3 SOUL AND SOULS

Plotinus calls Soul a reason (*logos*) of Mind, meaning that it is a discursive and hence imperfect expression of Mind's simple intellectuality. He also says that even matter receives what reason it can, whereby Soul is the global medium for the local intellectual-principles or reasons (*logoi*) that join the more perfect forms of Mind, the Ideas, to the less perfect forms of the physical cosmos – bodily objects in their various shapes. Soul, a

reason of Mind, gives body its reason. The forms that bodies take are corporeal expressions of reasons that have fallen into matter from Ideas in Mind on high down through Soul and souls. Ficino's explication of this psychic cosmology has more imagery than light:

> The world always abounds naturally in growth from the seeding (*seminarius*) power of its own Soul, as any living being does from its seed (*semen*).... Therefore, Soul (especially the World-Soul) as a principle of life acts always and chiefly in itself inasmuch as its intelligence forms its own reason (*ratio*) from just this source.... But it is in the nature of reason (*ratio*) to think discursively with itself, and it swells everywhere and exults with the seeds of all things. Indeed, from this inward and rational motion, through the seminal reasons of things, grows the rational form of the world.

But Ficino's presentation – already described – of the same material in the first chapter of *De vita* 3 is more schematic, a clearer outline of correspondences among ideas, souls, seminal reasons, and material species within reach of the magus.[13]

In his Plotinus commentary, Ficino insists that while the World-Soul's presence to a fit material receptacle may cause the life of an ensouled body, the greater Soul is not to be identified with the life of that body, with a soul individuated in matter. Christian orthodoxy, aggravated by worries about the unitary Agent Intellect of the Averroists, compels Ficino to sacrifice metaphysical subtlety on this other major topic of *Ennead* 4.3, the subordination of souls to Soul. Caution cramps his reaction to the claim that "sympathy ... between soul and soul is due to the mere fact that all spring from that self-same Soul." He comments that "our souls sympathize so much with each other and also with the World-Soul that they are often affected together by a like excitement, and an impulse of some sort flows quickly from one to the other." Then he covers his bets: "This by no means requires that our souls are begotten by the World-Soul." Wary of a unitary Intellect, he goes carefully with the doctrine of cosmic sympathy that might support it, though his theory of magic relies on sympathies.[14]

Plotinus has much to say about sympathy in his "Problems on the Soul," where he gives a sustained analysis of magic and prayer from a perspective that is mainly psychological but also physical and metaphysical. While he wants to absolve the heavenly gods of complicity in earthly affairs, and while he also accepts relations both of causation and of signification between celestial and terrestrial events, he claims as well – as far as the gods are concerned – that any effects of magic and prayer

occur unintentionally, without volition from on high. To clarify this point, he compares medical with magical actions. The metaphor made a deep impression on Ficino the physician, who mentions it several times: Plotinus proposes an

> analogy of many powers … in one living organism … which, independently of plan or … method, act without any … will: one member … is helped or hurt by another in the mere play of natural forces; and the art of a doctor or magic healer will compel some one centre to purvey something of its own power to another centre. Just so the All: it purveys spontaneously, but it purveys also under spell; a petition brings to some one part the power laid up for each: the All gives to its members by a natural act, and … the giver does not know of the gift.… A man may therefore help himself to what lies open to all.

Techniques of magic available to mortals are simply imitations of what Plotinus calls "the true magic … internal to the All, its attractions and, not less, its repulsions. Here is the primal mage and sorcerer – discovered by men who thenceforth turn those same ensorcellations and magic arts upon one another." Although Plotinus does not use the medical analogy in this last passage, Ficino begins his commentary on it by pointing out that

> any organ of an animal has the power to attract its proper share of nourishment, as the heart attracts spices, the liver sweets [and so on].… The condition of the cosmic animal is the same; throughout are scattered things that can strongly attract to themselves one thing or another.… In this living thing different powers naturally disjoined from one another are closely conjoined by the Magus, … and the cosmos commits no sin.

Ficino then explains that four such powers are dispersed through the universe and available to the physician: "occult qualities of species, figures, harmonies and prayers." Only the first two, species (*eidos*) and figure (*schêma*), are of immediate interest.[15]

4 FIGURES

Often in *Ennead* 4.4, only a few times in 4.3, Plotinus uses *schêma* in three ways:[16] broadly, it is the form, shape, or figure of an object or set of objects, and in this sense the word has a long philosophical history before Plotinus;[17] more narrowly, it is the figure formed by heavenly bodies, whether they are stable in the zodiac or mobile in planetary aspects, and this is the commonest use in *Ennead* 4.4;[18] in another

technical application, a *schêma* is the gesture or attitude of a dancer in a performance or of a magician in a ceremony.[19] The verb *schêmatizein*, 'to configure,' and derivative nouns for 'configuration' – *schêmatisis* and *schêmatismos* – have similar uses in 4.4.[20] Plotinus also treats *schesis*, which normally is 'condition,' 'state,' or 'habit,' as a synonym for *schêma*, giving it an astrological meaning.[21] The purpose of his elaborate punning on the philosophical, astrological, theatrical, and magical senses of these words is to show that cosmic sympathy – with its magical effects – is automatic, unintended, and hence not attributable to any willed act of the divine.

The long, lovely analogy that introduces *schêma* and its cognates runs through three sections of *Ennead* 4.4. Plotinus compares the cosmos to a dancer; modifications in the structure of the cosmos to changes in the dancer's posture; and configurations of stars to gestures in a dance. The stars in a celestial figure are no more the true and sufficient causes of the events they signify than a dancer's gesturing limb is such a cause of what the dance communicates to its audience, which sees a whole body dancing and feels its soul. The real causes of meanings felt and events signified are a whole dancing person and the whole cycling cosmos, both of them ensouled and entire. A dancer has in mind an entire performance, not just momentary movements of arms and legs, and the divine cosmos has no intention at all of forming visible figures made of stars, much less the terrestrial phenomena signified by such figures.[22]

"The whole cosmos is a single living being dancing to a pattern of music," as Ficino puts it: "First the dancer looks intentionally to the music within him, next through this music to the cycling limbs of the cosmos, and third through these cycles he somehow sees to the things that follow from them or are at least signified by them." Divine intentions go within, back, and up toward Mind, not without and earthward; the automatic effects below are unintended, indirect, and understood by us indistinctly; perhaps what we see as divine are not effects at all – maybe just what is signified but not actually caused.[23]

Nonetheless, the circling cosmic figures are sources of power, as Plotinus explains: "the magician draws on … patterns (*schêmata*) of power, and by ranging himself also into the pattern is able tranquilly to possess himself of these forces." Ficino locates those powers in the spheres and the stars – especially the figures made of stars, both fixed and mobile. "What happens below the Moon," he writes, "follows especially from these powers of natures and figures.… The celestial figures indeed signify

lower events, while natures together with figures cause them by disposing matter."[24]

Although the causing is unwilled by the cosmos, it is not unreasoned, since *logos* informs all the celestial configurations. In fact, the figures (*schêmata*) are brought into being by reasons (*logoi*) and are reasons themselves. Plotinus tells us this, adding that – in addition to the powers of heavenly figures – there are other marvels, also shaped by reasons and accessed through special, non-elemental qualities in stones, plants, and animals on earth. For Ficino this is another source of power, the one he calls "occult qualities of species." He reveals their origin while commenting on *Ennead* 4.4:

> All powers of natural things exist, first, in the seminal reasons of Nature in general. From there, they are soon carried over into the spheres of the world and their figures, the fixed and the revolving, and thence into the species of natural objects, in which wondrous, supra-elemental powers derived from them lie hidden, and also, from the same figures of the heavens, the powers descend wondrously into lower figures.

The significance of this passage emerges from the several senses in which Ficino – like Plotinus with *schêma* – uses the word 'figure' (*figura*).[25]

For the magic of *De vita 3*, the most important figures are the natural shapes seen in groups of stars and reflected on amulets by artificial talismanic carvings. The lower artificial figure draws power from the natural figure above because both figures belong to a hierarchy of forms that reaches down from Mind through Soul and its *logoi* to body. At the end of a chapter "on the might of the heavens and the powers of the rays from which images are thought to get their power," Ficino concludes that

> an image (*imago*) will be more effective if the elementary power in its matter is well adapted to the specific power naturally implanted in the same matter and if this also adapts to the other specific power to be received through a figure from the action of the heavens.

A material image – say a scorpion carved on a gem – provides three sources of power: the manifest power of the stone's elemental qualities; the occult power of the stone's specific form; and another occult and specific power deriving from the resemblance between the artificial, carved figure of the scorpion and the natural figure of the constellation Scorpio. "One figure needs the other," Ficino explains. A material image cannot be fully active unless all three of these powers conform to reinforce one another.[26]

Figure 20. Scarab with Scorpions, Egypt 1550–1295 BCE
(Art Resource, from New York, Metropolitan Museum of Art, 26.7.563)

From Plotinus and Aquinas he learned how such powers could be in conformity, and in *De vita* he describes the linkages that bind figures in terrestrial objects to ideas in supercelestial Mind:

> Figures … having natural parts possess a special property inseparable from species inasmuch as the figures along with species have taken their dispositions from the action of the heavens. Figures actually have a very strong connection with Ideas in Mind. … And since … they are a kind of species assigned to their own Ideas there above, they undoubtedly get their own powers from there. This is why … the species of natural objects … are bound to particular figures.

What is it that joins figures to Ideas? Ficino thinks of figures as cousins of specific or substantial forms, the forms that make things what they are, members of their species. He cites St. Thomas on this point, whom he echoes by claiming in a metaphysical pun that change in the *species* (*eidos*) of an object implies change in its *forma* (*eidos*). He also knows the passage of *Ennead* 4.4 where Plotinus associates reasons (*logoi*) with the

occult properties carried by an *eidos* – which can be both a 'substantial form' and a 'species.'[27]

Commenting on that passage, Ficino explains how the reasons (*rationes*) in Nature – a partner of Soul – transmit power to the celestial spheres and the figures constituted by them. In turn, the heavens and their figures give power both to natural species and to figures made of lower objects. Because the whole movement takes place through entities which, at higher or lower levels, are reasons, the common dynamic agent in the process is reason or *logos*. Plotinus treats the celestial figures (*schêmata*) as reasons (*logoi*), and because such reasons have the function of informing matter, a reason is also a form (*eidos*). Thus, if a *schêma* can be a *logos* or an *eidos* – meaning that a figure (*figura*) is also a reason (*ratio*), a species (*species*), and a form (*forma*) – metaphysics multiplies and intensifies the visible, physical similarities between terrestrial and celestial figures.[28]

In the *Enneads* Ficino finds evidence of close kinship between two of the three sources of power – celestial resemblance, specific form, and material quality – whose conformity he requires in an image. For his purposes, what Plotinus cannot offer is complete hylemorphic union between matter and form: true hylemorphic composition would endow even the inert matter of the image with the conforming properties that radiate from natural to artificial figures.[29]

The reason (*logos*) that is the species or form (*eidos*) of a gem can be in the same order (*taxis*) with the reason that is a figure (*schêma*) made of stars. But a material thing in the metaphysics of Plotinus is not the composite substance of Aristotelian metaphysics; its matter remains passive and finally dead to the form, which is sometimes said to be *on* it rather than *in* it. So Ficino must complete the requirements for an effective image with a scholastic doctrine of substantial form, taken chiefly from St. Thomas. He appeals to Aquinas as guarantor of his orthodoxy in the final chapter of *De vita 3,* which also recapitulates the Neoplatonic doctrine of reasons introduced at the start of the book:

> Mercurius says that the priests got a harmonious power from the nature of the world.... Following him, Plotinus thinks that the All can be favorably arranged when the World-Soul joins it together insofar as it breeds and drives the forms of natural objects through certain seminal reasons implanted in it by divine agency.... Through reasons of this sort, the World-Soul can easily apply itself to the material things it originally formed through these same reasons, when the Magus or the priest applies forms of things ... that properly incline towards one reason or another.... Sometimes it can also happen that higher gifts

> descend if reasons are applied to forms in this way inasmuch as reasons in the World-Soul are joined to intellectual forms of the same Soul and through them to ideas in the divine Mind.

Although his views on the strict formlessness of prime matter make Thomas reject the doctrine of seminal reasons as commonly understood in the Middle Ages – reasons as forms seeded in the potency of matter – Ficino might still have considered Aquinas's metaphysics compatible with what Plotinus teaches about *logoi* as reason-principles. The pure passivity of matter in the metaphysics of Plotinus and the stark immateriality of his *logos* challenged Ficino to understand the problem of matter and form in a Neoplatonic way while blending this account with the familiar Thomist hylemorphism. It took Ficino's eclectic genius to put philosophical doctrines so distant from one another equally at the service of an original theory of magic.[30]

CHAPTER FOUR

ANCIENT PHILOSOPHY IN FICINO'S MAGIC: NEOPLATONISM AND THE CHALDAEAN ORACLES

The signs themselves are self-efficacious.[1]

1 STATUES

Neither the Hermetic treatises that Ficino translated from Greek in 1463 nor the Latin *Asclepius* that he cited in the third of his *Three Books on Life* in 1489 say much about magic. That is why he had to look elsewhere, to other ancient and medieval sources, for the physical and metaphysical foundations of his theory of magic. Three texts more useful to him had been written in late antiquity by Iamblichus, Synesius, and the unknown author of the *Chaldaean Oracles*. The fragmentary *Oracles*, the short treatise *On Dreams* by Synesius, and the much longer polemic *On the Mysteries of Egypt* by Iamblichus all appear in the final chapter of *De vita* 3.[2]

In that chapter Ficino picks up threads of the commentary on Plotinus that had inspired him to write about astrological medicine. Because we have Ficino's extensive analysis of the *Enneads*, the commentary illuminates his use of Plotinus in *De vita 3*. The influence of Hermes Trismegistus is harder to track in that way. Most of what has been mistaken for Ficino's comments on the *Hermetica* – despite authoritative identification of the material – was actually written by Jacques Lefèvre d'Étaples. Moreover, Ficino mentions Trismegistus only in three passages of *De vita 3* and only twice by that name. To discover his views on the meagre magical content of the *Hermetica*, it helps to know the context of the two parts of *De vita 3* where Trismegistus appears. Plotinus is one key to that context, but so are the *Chaldaean Oracles* and the later Neoplatonists who treated them as sacred scripture – especially Iamblichus and Synesius.[3]

The two passages of *De vita 3* that mention the figure whom Ficino calls Mercurius or Trismegistus – taking him to be an Egyptian sage or god of Mosaic age – refer to the same two passages of the Latin *Asclepius*. Since this involves none of the Greek Hermetica that Ficino translated, there is no reason to connect the Hermes of *De vita 3* with Ficino's project of translating and interpreting Plato's dialogues and related Greek texts. The *Asclepius* itself, of course, was not a discovery of the Renaissance: it had been read in Latin since late antiquity and through the Middle Ages. Ficino's few references to it appeal (uneasily) to authority. They do not introduce philosophical arguments that might ground a theory: instead of explaining how magic works, they invoke ancient testimony for its efficacy. The key claim is that statue-making as described by the *Asclepius* can cause statues to be animated by a god – or the type of demon, as Christians would say, that occupies an idol. The marvel for which Ficino has Hermetic corroboration is illegitimate because it is idolatry, breaking the first and second commandments and sinning against religion.[4]

Ficino's reader waits until the thirteenth chapter of *De vita 3* for a first encounter with Trismegistus, in a list of authorities – including Synesius, Iamblichus, and the Chaldaeans – who claim that magicians can induce spiritual beings from on high to enter material objects here below. Showing how talismans work, this chapter does not aim to prove that they are lawful – or not lawful. But in the twentieth chapter, after stating his suspicion that the power of talismans comes naturally from the matter in them, not artificially from the images on them, Ficino hesitates, noting that

> the Egyptians attribute so much to statues and images fabricated with astrological and magical technique that they believe spirits of the stars are sealed inside them. But some think that these spirits of the stars … are demons … , and whatever they may be, … they think they are implanted in statues and talismans no differently than demons sometimes possess human bodies.… I believe that these things can actually be done by demons not so much because they are constrained by a particular material as because they enjoy being worshipped. I will discuss this elsewhere more carefully.

Having declared that talismans work, either through physical qualities or by demonic agency, Ficino then raises the issue of legitimacy by comparing the animation of statues to demonic possession and by identifying a blasphemous motive for what the demons do. Then he abruptly suspends

this religiously sensitive discussion of the Hermetic statues, which make their final entrance in the last chapter of *De vita*.[5]

Trismegistus enters that chapter as a precursor of Plotinus, foreshadowing his belief that

> ancient priests or magicians used to capture something divine and wondrous in statues.... Along with Trismegistus, he supposes that divinities altogether separated from matter are not captured through material objects but only the cosmic kind, strictly speaking, as I have said from the beginning and as Synesius agrees.... Mercurius, whom Plotinus follows, says that these are aerial demons – not celestial, much less anything higher – ... and he adds songs resembling the heavens in which, he says, they take delight and hence remain for some time in the statues, doing good for people or else doing them harm. He also says that when Egypt's sages, who were also priests, could not convince people by rational means that the gods exist ... , they devised this magical enticement (*illicium*) so that, by attracting demons into statues, they

Figure 21. The Goddess Tawaret, Ptolemaic Egypt, 332–30 BCE.
(Art Resource, from New York, Metropolitan Museum of Art, 26.7.1193)

> showed them to be divinities. But Iamblichus condemns the Egyptians because they not only took the demons as steps, as it were, on the path to higher gods but also frequently adored them.... Mercurius says that the priests took a suitable power from the nature of the cosmos and mixed it in. Plotinus followed him.

Ficino hears Hermetic echoes in Plotinus and whispers of the theory of seminal reasons, a key piece of magical metaphysics. Given the pivotal place of the *Enneads* in *De vita 3*, linking Plotinus with Hermes in this way would seem to endorse Hermetic statue-magic. Also, since Hermes and Plotinus agree that only cosmic powers – not their hypercosmic betters – enter the statues, the *Asclepius* joins the *Enneads* on the side of caution: approach only lower powers, never the high gods.[6]

Yet those powers of "the cosmic kind" are lured by idolatrous rites to enter statues and do harm. Augustine had warned that the Egyptian idol-makers used a deception, a "magical enticement," to trick their own people into a blasphemous belief – that demons are gods. And wicked demons delight in astrological song. This is the illicit worship that Ficino equates with demonic possession in *De vita* 3.20, just as Michael Psellus – a distinguished Platonist – "disapproves and derides" demonic chants in *De vita* 3.13.[7]

But 3.13 – where the topic is how images work – is silent on the legitimacy of statue magic. If 3.20 rules such practices out, what is decided by the ambiguous 3.26? Can we learn anything from other authorities – Synesius, Iamblichus, the Chaldaeans–associated with these few strained comments on the *Asclepius*?

2 JYNXES

Ficino, who translated the treatise by Synesius *On Dreams*, cites that work at the end of *De vita* to confirm that hypercosmic gods play no part in statue-magic; the matter of statues, which are artificial forms of lower nature, attracts only cosmic divinities. Beginning his book, he had made the same point, calling on Synesius to show that lower material forms, acting as baits or lures for higher powers, can attract at least some parts of Soul. "Such congruities of forms to reasons of the World-Soul," he explains, "Zoroaster called divine baits (*illices*), and Synesius also confirmed that they are magical lures (*illecebrae*)." Ficino returns to Synesius when he makes a list of authorities on animated statues, meaning to show that matter can receive demonic and divine as well as celestial gifts.[8]

Synesius was born around 370 – just before Iamblichus died – in Cyrene, on the coast of North Africa, a few hundred miles west of Alexandria, where he studied philosophy with Hypatia. By that time, the successors of Plotinus had found a new holy book, the *Chaldaean Oracles*, a medley of verses attributed to Zoroaster and the Magi: Julian the Theurge – about whom little is known but the name – may have written or redacted or collected the *Oracles* before 200. Like Porphyry, Synesius was entranced by them, citing them frequently in the dream-book that he wrote by 411. In that year, he became Bishop of Ptolemais in North Africa, shortly before a mob of Christians murdered his teacher in Alexandria. By taking on a bishop's duties, Synesius accepted the institutional realities of his time and place, apparently without deep commitment to the new faith: the dream-book shows no concern for Christianity.[9]

On the contrary: *On Dreams* confronts problems – the ensoulment of the body, the soul's immortality, the resurrection and glorification of the body – that alienated Hellenes like Synesius from convinced Christians like Cyril, the bishop of Alexandria who incited his congregation to kill Hypatia. The confrontation is veiled, however, not only by ornate rhetoric but also by an intricate philosophical psychology and its terminology – thinly explicated in less than forty pages.

On Dreams is an exploration of imagination (*phantasia*), a faculty of the soul. The soul itself is life (*psuchê*), a power lower than reason (*logos*) or mind (*nous*). Because all human life is to some extent embodied, no level of the soul – higher or lower – has direct access to the real, bodiless forms present to the mind. The soul sees those divine forms indirectly, reflected in the mirror of imagination, which is also where gods visit mortals in dreams. Understood as a medium, the soul's spirit (*pneuma*) – neither wholly material nor wholly immaterial – connects body with mind through the imagination. Called animate spirit (*pneuma psuchikê*) or spiritual life (*psuchê pneumatikê*), the soul's spirit is also its mode of transport or vehicle (*ochêma*) and its ghost (*eidôlon*), the soul-phantom. The vehicle carries the soul as it falls into an earthly body or rises to escape, accreting or shedding thinner and thicker coverings. The soul's phantom makes a place for bodily memories, with their moral burden, in a disembodied afterlife. These are just a few functions of the phantom, the vehicle and spirit, whose roles are complex and obscure in the little treatise *On Dreams*.[10]

More than a thousand years after Synesius died in 413, Ficino relived his dilemmas, hoping once again to build Jerusalem in Athens and make the Academy a Church. To explain the magical enticements of the *Oracles*,

he goes to the dream-book, finding its arguments familiar because they follow the exposition of natural magic in *Ennead* 4.4: "nature is everywhere a sorceress, as Plotinus says and Synesius also, everywhere enticing particular things with particular baits." Recapitulating Plotinus and Porphyry on cosmic sympathy as the basis of natural magic, Synesius insists that such magic deserves a divine response, but only if the divinity lives within the cosmos. All its parts are

> members of one living thing.... A stone or a plant from down here suits a god – one of those that live within the cosmos – since the god is affected as they are, yielding to nature and letting the enchantment work, ... though a divinity from beyond the cosmos cannot be enchanted at all.[11]

To the usual material from the *Enneads* Synesius adds jynxes (*iunges*) or magical charms, which he found in the *Chaldaean Oracles*. These jynxes – which are both material objects and immaterial processions from the Father – are Ficino's 'baits' and 'lures,' magical enticements for divine powers. Luring and drawing are energies of the erotic spells of Plato's *Symposium* as interpreted by Plotinus:

> The qualities inducing love induce mutual approach: hence there has arisen an art of magical love-drawing whose practitioners apply by contact certain substances ... so informed with love as to effect a bond of union; they knit soul to soul as they might train two separate trees towards one another.... Supposing the mage to stand outside the All, his evocations and invocations would no longer avail to draw up or to call down.

In verse the *Oracles* describe the same system of intra-cosmic sympathies powered by love-spells or jynxes, which are

> thought (*nooumenai*) from the Father as they themselves think, moved to thinking by his unutterable counsels.

The Father's supernal thoughts are also charms spoken or sung or even physical objects – a child's toy, a musical instrument, or a bird – believed to transmit magic or to activate it by motion or sound or both. Where the Greek *Oracles* describe jynxes that the Father has "thought," the Quattrocento Latin version has *intellectae motacillae*, meaning the wagtail, a bird mentioned by Varro and Pliny. The magical bird is either this wagtail (*Motacilla cinerea*) – small, sparrow-like, constantly shaking its long tail (hence the name) – or else a wryneck (*Jynx torquilla*), a woodpecker that hisses while twisting its head menacingly. The toy is a perforated disk

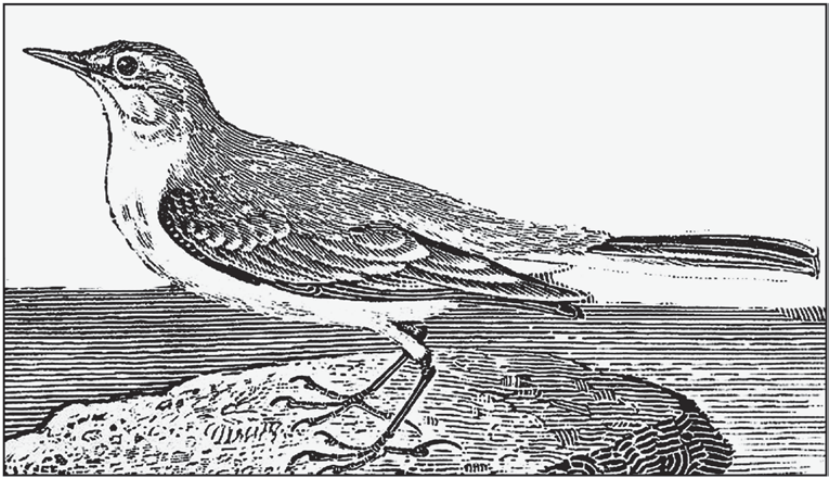


Figure 22. Yellow Wagtail.
(Bewick [1797], p. 191)

sliding on a loop of string. Commenting on the *Oracles*, Psellus describes a different device, the musical instrument now called a 'bull-roarer,' a *rhombos* in Greek. Under one or more of these descriptions, the elusive jynx, which is also a spell cast rhetorically by a speech, eventually became a 'jinx' in English.[12]

Synesius, while distancing himself from wizards, uses the language of Plotinus to approve the jynxes of the *Oracles*:

> The parts of this All – since they breathe together and feel together with one another like limbs of a single whole – may be the same as the jynxes of the Magi, spell-casting and signing to one another, and the sage recognizes the common lineage in the parts of the cosmos, drawing the one through the other.

If the jynx is a wryneck or wagtail, the bird's striking behavior gives a visible sign of invisible powers that attract the circling heavenly gods by resemblance – like decoys floating on a pond to lure geese flying above. Synesius uses the jynx to introduce an analogy between casting a spell (*thelgein*) and giving a signal (*sêmainein*). Like other Neoplatonists of his era, he wants to distinguish an unlawful art of magic from a lawful one, a distinction mirroring the opposition between matter and mind. As a magic of immaterial signs rather than material things or physical causes, divination has more of the divine mind than a lower wizardry (*goêteia*) whose spells bind the magus down to matter. This is why Synesius sees

Figure 23. Bull-Roarer.
(Weule [1910], p. 19)

no harm in giving an account of divination (*manteia*). But since his treatise is "law-abiding," there is no place in it for the "rites" (*teletai*) that Ficino translates pleonastically as "purifications and rituals" (*expiationes solennitatesque*).[13]

To what rituals does Synesius object? His account suggests that illicit rites are those magical procedures that trap the magus in matter, unlike the sacred ceremonies of divine mantic that release him. When we turn to the views of Iamblichus on the subject – the Iamblichus whom Ficino cites along with Synesius as an authority on statues – it seems likely that statue-magic (Proclus calls it *telestikê* from *telein*, 'to consecrate') is the ritual worrying Synesius.[14]

3 EGYPTIAN MYSTERIES

On the Mysteries of Egypt, which Ficino also translated, responds to Porphyry's *Letter to Anebo*, a sceptical inquiry into divination, theurgy, and

their reliance on gods and demons. Although Iamblichus was a Syrian (like Porphyry, his teacher), he assumes the voice of an Egyptian priest to make the case against Porphyry for efficacious and legitimate theurgy and divination. Through a series of distinctions and exculpations, he ascribes any flaw or evil in these practices to humans rather than gods, or to demons rather than higher divinities, or to bad demons rather than good demons and so on. He also distinguishes bad ritual, marred by human error and evil, from good rites that follow the god-sent rules.[15]

Theurgy or 'god-working' – as distinct from theology or 'god-talk' – is a rite in two stages, a lower ritual to initiate the proceedings and a higher one to complete the process, whose aim is union (*henôsis*) with the divine. Lower theurgy, which appeals to cosmic gods, requires the ritual manipulation of material symbols (*sumbola*) and signs (*sunthêmata*) appropriate to those lower divinities. Its efficacy comes from the sympathy that unifies and vitalizes the cosmos. But the efficacy of the higher theurgy that addresses hypercosmic gods originates in the divine love that transcends cosmic sympathy.

Although the higher theurgy includes ritual elements, its final stage is the disembodied intellection (*noêsis*) that produces union. The theurge reaches those heights, however, after also completing lower rites of initiation that depend on material objects and involve the body. The preliminary rites have their own efficacy. But since their power comes from cosmic sympathy, their effects are confined to the world of nature and to the lower gods that rule there. Unless the rites lead up to the immaterial, noetic stages of higher theurgy, whose autonomous powers transcend the cosmos, this descent into the body and matter to exploit them magically will be worse than incomplete. It will be a defilement, both physically and spiritually.[16]

The risks in lower theurgy come from human evil and ignorance, not from any defect in the divine. If a theurge is a bad person – clumsy and thoughtless, botching the rituals, mixing up the different rites required by the distinct natures of hypercosmic and cosmic gods, forgetting that the lower theurgy of sympathies is merely a prelude to the higher theurgy of intellection – that wayward magus may find himself not rising to divine union but mired in the depths of otherness and helpless against the fierce, capricious powers who govern there.[17]

Even worse than bungled theurgy are other rituals that are not theurgic at all. To distinguish such practices from theurgy, Iamblichus calls them "wonder-working through illusions" (*phantasmatôn thaumatourgia*). The genuine theurge contemplates the true essential forms (*eidê*) of the gods,

but the thaumaturge only sees and touches their false artificial images (*eidôla*). If this trickery gets any good from higher powers, descending through the cycling heavens, down to the darkest margins of the All, that descended good has become merely physical. It arrives by magical technique, not from theurgic contemplation. Describing this crude magic, Iamblichus worries especially about the making of images or idols (*eidôlopoiia*), which he condemns at length. "One must know about the nature of this wonder-working (*thaumatourgian*)," he cautions, "but by no means use or trust it." Ficino echoes his warning when he claims to be describing images in *De vita 3* but not approving them.[18]

Iamblichus shuns statue-magic not only as a detour from righteous theurgy but also as an invitation to evil, perverse demons who deceive people and injure them: "if we were to speak truthfully now about images and the evil demons who pretend to appear as gods and good demons, it is clear that a great maleficent host streams into them from that source." Ficino understands what Iamblichus fears. He records the sage's anxieties in *De vita* while describing correspondences between types of image and types of demon, and again after relaying similar warnings from St. Thomas:

> Iamblichus says that those who neglect sanctity and the highest piety, who put their trust in images alone and expect divine gifts from them, are most often deceived in this regard by evil demons who rush in under the guise of good divinities. Yet he does not deny that certain natural goods can result from images put together according to legitimate principles of astrology.[19]

Although astrology, duly constrained, can use images to deliver natural – but not divine – benefits, the same images are lairs of demons if the user seeks "divine gifts." Such seeking, however, is the whole point of Hermetic god-making, as Ficino knew. This is his restatement of what Iamblichus says about statue-magic as demonic thaumaturgy rather than divine theurgy:

> Iamblichus condemns the Egyptians … because they frequently adored demons. In fact, he prefers the Chaldaeans to the Egyptians as not possessed by demons – Chaldaeans, I maintain, who were ministers of religion, for I suspect that Chaldaean as well as Egyptian astrologers tried somehow to attract demons through celestial harmony into earthen statues.

All the heathen astrologers, Chaldaean as well as Egyptian, dealt with demons, but Chaldaeans who were religious officials and not just astrologers avoided demonolatry, unlike the demon-ridden Egyptians repudiated

by Ficino. They are the god-makers (*deorum fictores*) of the *Asclepius*. The gods they make are mere idols (*eidôla*), baits for evil demons, no true gods at all.[20]

The Chaldaeans – admired by Iamblichus as prophets (*prophêtai*) and contrasted with the Egyptians – have reserved a special language for religion, a "pure speech to be used only for the gods," as Iamblichus explains. These pious Chaldaeans carefully distinguish bad divinities from good ones. When the latter "start to shine, the evil and demonic kinds vanish, making way for the higher gods just as darkness fades in light, and there is no chance of trouble for theurgists." But for a weak, sensuous, criminal, and polluted magus, danger lies all around. When such people "attack the divine without rule or order," the risk is that "the impious blunders of their unholiness enter the sacred work in disorder, … sometimes bringing in evil demons instead of gods." Even though the Chaldaeans who left proof of their piety in the *Oracles* were also learned in astrology, their honest astral science will not have been like the deceitful Egyptian idol-making (*eidôlopoiia*). Those good Chaldaeans or Magi or followers of Zoroaster appear in *De vita 3* as proponents of various astrological doctrines, mostly unrelated to the problem of demonolatry.[21]

4 CHALDAEAN ORACLES

The *Oracles* teach an ancient theology, not an astrology. Zoroaster himself – as Ficino tells it – calls material forms "divine baits" for powers of Soul, and a precept of his Chaldaean disciples encourages the mix of medical and theological therapies that Ficino prescribes: "raise a fiery mind up to the work of piety, and you will save a fallen body." From a commentary on the *Oracles* by Psellus, Ficino will have known that this "work of piety" follows "the methods of the rituals" – theurgy – and he also has the assurance of Iamblichus that pious theurgy is just the opposite of demonolatry. More problematic is a passage from a list of authorities on animated statues in *De vita*:

> To evoke a spirit from Hecate, the Magi, … followers of Zoroaster, used a sort of golden ball marked with celestial characters and containing a sapphire inside; as they chanted, it was whirled about on a sort of thong made from bull's hide. I gladly omit the incantations, of course, for Psellus the Platonist also disapproves and derides them.

Actually, it is the entire description of these material jynxes that Psellus mocks, complaining that "the whole thing is silly talk." As far as Ficino

knew, however, this nonsense – clearly a recipe for demon-worship – did not actually come from the *Oracles*. Nothing like it occurs in the compilation of *Oracles* available to him. Moreover, when Psellus discusses the jynxes that are mentioned in the *Oracles* known to Ficino, he treats them not as physical devices for working magic but as immaterial powers flowing from above, responding to the "divine baits" – as Ficino puts it – that Zoroaster describes as attracting soul to matter. Chaldaean piety motivates Chaldaean astrology, explaining why Iamblichus prefers Chaldaeans to Egyptians. He devalues Hermetic statue-magic to elevate Chaldaean theurgy, making the Chaldaeans better models for Ficino than Egyptian idolaters.[22]

As a theoretical construct, Ficino's magic is eclectic, distinctively Platonic in metaphysics but fundamentally Aristotelian in cosmology yet also Galenic on the medical side and – in some key elements of metaphysics – scholastic and post-Aristotelian as well: although no single label like 'Neoplatonic' will do the job, prominent parts of Ficino's theory have Neoplatonic sources. Seen as a philosophical presentation of principled statements justified by argument and evidence, this theory has no 'Hermetic' basis at all. Seen as a recovery of ancient wisdom, Ficino's magic is more Chaldaean than Hermetic, though it is also Orphic and also – in this genealogical or testimonial sense – Platonic and Neoplatonic.

A good Christian like Ficino must fear and despise Hermetic statues as demonic idols. If astrological talismans are like the Egyptian statues, they too are evil. But a lower theurgy that makes magic out of natural objects may still be effective. Natural magic will just be dangerous and a distraction, however, unless it leads to intellection (*noêsis*) and the higher gods – according to Iamblichus. The attractions of noetic theurgy – with the "intellectual and unbodily rule of the priestly art" at its core – are powerful for a Platonist philosopher. But Ficino is also a physician. To heal the body, what help can he get from a purely noetic theurgy? Iamblichus teaches that only people of poor character will concern themselves with the merely physical effects – including medical results – of the lower theurgy which, when confined to its own material sphere, still keeps the magus vulnerable to demons. The ambitions of a perfected theurgy are necessarily hypercosmic and therefore not bodily. If Ficino the philosopher was tempted to follow this sublime path in his magic, the priest in him must have trembled to climb so high except through rituals sanctioned by the Church.[23]

Had Plotinus been Ficino's only guide to a theory of magic, his path would have been clearer. Plotinus never mentions theurgy, a Chaldaean

novelty introduced into Neoplatonism by Porphyry. Magic for Plotinus is always a product of sympathy in the All. Like everything else in nature, sympathy can be traced to causes beyond the cosmos, but it opens no route to those causes. Because there is no magic without sympathy for Plotinus, all magic for him is natural, even when demons get involved. Had Ficino been content with a non-demonic natural magic for medical uses, sympathy might have been all that he needed and not as risky as theurgy.

But from Iamblichus and others Ficino learned about the theurgy that reaches beyond sympathy and makes a bridge to intellection (*noêsis*) and union (*henôsis*). This more ambitious magic puts temptation in his way. Since the higher noetic theurgy, initiated by a lower magical theurgy, ascends to the divine Mind, it responds to the Platonist yearning for pure immaterial union with the One. But for a Christian the strange rituals that the magus needs to achieve initiation are – at best – occasions of sin. Faced with these conflicts, Ficino brings his treatise on magic to an ambiguous, perplexed conclusion.[24]

5 HIGHER GIFTS

Iamblichus is the last authority cited by Ficino in his last chapter, to reinforce a point taken from Plotinus – a point that might seem to abandon the ideal of a purely sympathetic, cosmic magic. Given the right connections among Ideas, forms, and seminal reasons, writes Ficino, "higher gifts may also sometimes descend, in so far as reasons in the World-Soul are joined to intellectual forms of that same Soul and through them to ideas of the divine Mind, as Iamblichus also agrees." As long as Ficino accepts a related principle, however – that no artifice of humans can cause the divine gifts to descend – perhaps the entirely natural magic of Plotinus can stay intact. Those wise enough to recognize the gifts simply accept their presence, receiving them with magic or in prayer. Magic is given in the nature of things, divinely ordained, and some mortals are clever enough to find it.[25]

When Plotinus briefly mentions the divinized statues, he uses them to illustrate the metaphysical principle that even material things accessible to humans can be fit receptacles for the divine – even though the fitness is a consequence neither of divine intention nor of human intervention. Iamblichus broadens and transforms this principle, as Ficino notes:

> Iamblichus confirms that not only celestial but even demonic and divine powers and effects can be caught in material objects which are naturally

> in sympathy with higher beings if they are collected and gathered in from various places at the proper time and in the correct manner.

So taken is Iamblichus with the magic of material objects duly purified and suitably assembled that he describes them as working *ex opere operato* – to borrow a phrase from Christian sacramental theology: the words mean 'from the deed that was done,' in contrast to 'from the deed of the doer' (*ex opere operantis*).[26]

The (later) Catholic dogma is that all the sacraments work *ex opera operato*, so that a heathen or a heretic can baptize a newborn infant, as long as she intends to baptize and she performs the rite correctly – pouring water on the infant's head and saying the sacramental words, "I baptize you ... ," and so on. In the case of the eucharist, this same doctrine – first formulated by Augustine, debated by medieval theologians and defined by the Council of Trent – together with other teachings about transubstantiation and the real presence, led to debates about *quid mus sumit*: the question asks 'what a mouse eats' if it eats what used to be bread, still looks like bread, but has become the body of Christ in the eucharistic ritual. Aquinas taught that the mouse eats Christ's body, the point being that once the rite has been duly performed, the performance of the rite – originally instituted by God – has turned bread and wine into Christ's body and blood, which persist even if a mouse gnaws on them.[27]

Like his Christian competitors, Iamblichus shifts the locus of ritual power away from personal agency – the moral standing, doxastic states, and some intentions of the agent – onto the act itself. Rising to intellection must complete and justify the pre-noetic theurgy whose effects are magical, but what actually achieves *noêsis* is no thought of ours:

> It's not the thinking (*ennoia*) that actually unites theurgists with the gods ... but the pious performance of acts surpassing description and all understanding (*noêsin*), along with the power of unspoken symbols (*sumbolôn*) understood (*nooumenôn*) by the gods alone, that establishes theurgic union.... Even when we are not thinking (*noountôn*), the signs (*sunthêmata*) themselves are self-efficacious ... , and the undescribable power of the gods indicated by them recognizes its own copies by itself without any stimulus from our thinking (*noêseôs*).

Action this automatic and depersonalized might be desirable in a purely natural magic – just as in the Christian sacraments. But since "higher gifts may also sometimes descend," Ficino must have recognized that by linking lower theurgy with the higher kind, Iamblichus opens a path to divinity that is philosophically enticing but threatening to religion.[28]

Better information about the history of his sources might have solved some of Ficino's problems. His interest in the Hermetica and his fear of their idol-making were, after all, results of mistakes in dating. It would have helped to understand how much the philosophy of the revered Platonists had changed over time: Plotinus began to write in the middle of the third century CE; Proclus died near the end of the fifth century; Psellus studied them and other Platonists in the eleventh century. The heirs of Plotinus had plenty of time to alter his themes and add to them. But the mythic history – or ancient theology – that Ficino took from the Church Fathers treats wisdom as revealed, inherited, and recovered, not devised and developed. Plato comes late in the story, and the novel brilliance of the dialogues is hard to reconcile with this chronology of revelation, reception, and mimesis – unless, like Ficino, we see the sequence explained, not undercut, by the textual facts of the *Hermetica*.

Ficino's Christian faith – not his shortcomings in philology and history – was in any case the main reason for his perplexity about magic. The magic exalted by the Neoplatonists after Plotinus had been notorious in Latin Christianity since Augustine wrote the *City of God*, and it was to remain so despite Ficino's efforts to reconcile it with philosophy and religion. The tension between Ficino's learning and his faith motivates the closing sentence of *De vita 3*, a confession of Christian orthodoxy: "how impure was the superstition of pagan people, but how pure – by contrast – the piety of the Gospel."[29]

CHAPTER FIVE

ANCIENT PHILOSOPHY IN FICINO'S MAGIC: HERMES AND PROCLUS

> … so that philosophy as well as magic
> might nourish the soul
> and medicine heal the body.[1]

1 KORÊ KOSMOU

The longest Hermetic treatise to survive in Greek, the *Korê Kosmou*, ends with an aretalogy of Isis and Osiris that tells the story of the two gods by proclaiming their powers and remembering their deeds. Of thirteen declarations in all, the last three praise the gods as

> those who, after learning God's secret statutes from Hermes, became inventors of all the arts, sciences and trades for mankind and lawgivers as well;
>
> those who, after learning from Hermes how the Craftsman disposed things below to sympathize with those above, raised up holy offices on earth that are sited with the mysteries in heaven;
>
> those who, after recognizing the mortality of bodies, contrived such perfection in all things for prophets that a prophet who will lift his hands to the gods never ignores any of those beings, so that philosophy as well as magic might nourish the soul and medicine heal the body when it is ill.

Although Isis and Osiris are mighty gods, Hermes – the Egyptian Thoth – is their teacher in this litany that closes a much longer exposition of two topics: the divine creation of a good world; and the destiny of sinful humans in that world. The cosmos as a whole and everything in it, bodily and non-bodily, is charged with energy and order. Although

human life shares this cosmic power, the human body is a prison for the soul, leaving mortals in need of a revelation to eliminate ignorance and bring saving knowledge. The *Korê Kosmou*, like other Hermetic treatises, is a gospel of that revelation, and magic is one of its precepts.

Once Isis and Osiris realize that bodies are mortal and defective, against this imperfection they raise up a class of holy men – prophets, whose understanding is so perfect that they never defile the rituals by forgetting to name a divinity who must be named. Ever mindful of the gods, these ministers of religion ensure that "philosophy as well as magic might nourish the soul and medicine heal the body." Along with philosophy and medicine, magic is a divinely ordained response to the amphibian human condition.

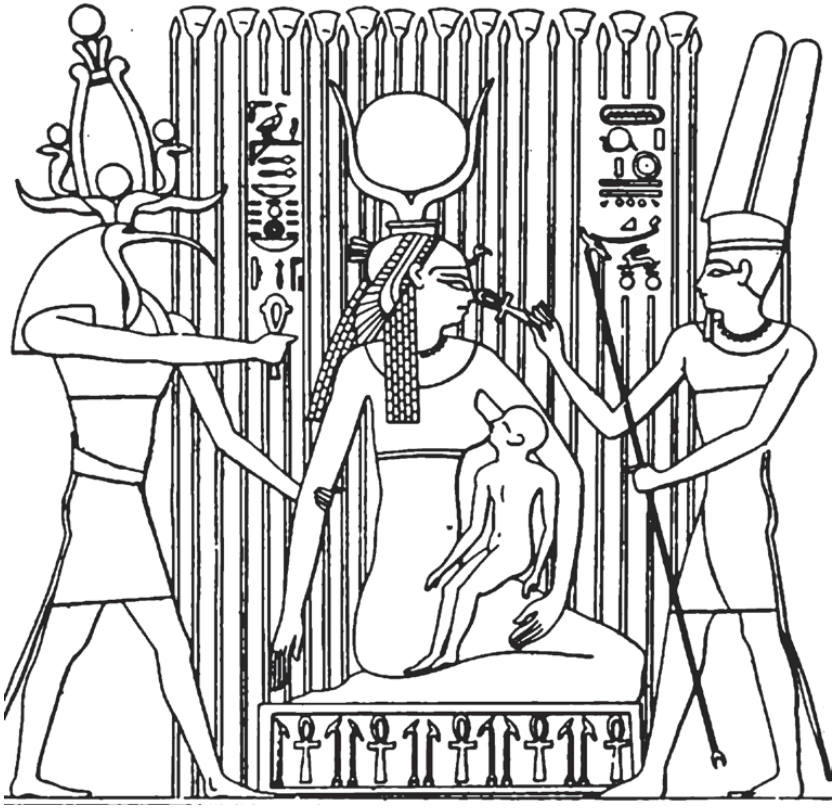


Figure 24. Thoth, Isis, Horus – the Son of Osiris – and Amon-Ra. (Budge [1908], p. 57)

Magic, philosophy, and medicine are among the "arts, sciences and trades" provided by the gods "for mankind." Such learning and skill belong to the prophets whose "holy offices on earth … are sited with the mysteries in heaven," in keeping with a cosmic law, that "things below … sympathize with those above." Since the divine Craftsman has built this principle of sympathy into the cosmos, it is fitting for his ministers, the prophets, to foster the magical effects of sympathy and also to master the philosophy that shows how sympathy binds the cosmos together. If those lessons are learned and the soul is well nourished, the body too will be healed by medicine and thrive.[2]

These few lines from the *Korê Kosmou* make much of magic. Sanctified by religion and grounded in the principle of sympathy, magic is a lesson taught by the gods, along with philosophy and medicine, when they gave all the arts, sciences, and trades to mankind. The passage is short, however, and the occurrence of the word *mageia* in it is the only one in the whole Hermetic Corpus, which fills four volumes in the standard edition.[3]

If magic were a big issue for the Hermetic authors, why not say its name more often? The question needs asking, and there is no satisfying answer. Yet the absence of *mageia* from the Corpus, save this one passage, does not by itself show very much. Although the presence of that word in the *Korê Kosmou* proves interest in magic on the part of one Hermetic author, its absence elsewhere is not probative: absence of such lexical proof is not proof of absence for the concept MAGIC, which can be expressed in Greek by other words and phrases. We can only imagine the accidents of survival and loss that may have eliminated Hermetic texts containing explicit discussions of *mageia*. The *Korê Kosmou* passage shows that such conversations happened in the Hellenized Egypt that produced the Hermetic Corpus, but it does not show how important – or unimportant – those talks were to the authors or their readers.

As far as *mageia* is concerned, a few lines of the *Korê Kosmou* are all we have to go on. But no one familiar with more systematic and extensive accounts of magic from late antiquity will have trouble spotting the relevant notions scattered throughout the Greek *Hermetica*: the cosmos is an organic unity whose parts affect one another because they share the same life; the unity of the cosmos is ascribed sometimes to a physical spirit (*pneuma*) or power (*dunamis*), referred at other times to an immaterial mind (*nous*) that penetrates everything; the geography of the Hermetic universe is the familiar post-Aristotelian arrangement, where things above are causes of things below; physical causality comes from the stars and flows through the spheres to the earth; since the stars are

also personal agents, the whole human person, not just the body, is the appropriate receptor at the bottom end of this system of magical and celestial influences.[4]

Nothing from this catalog of magical and astrological commonplaces is a headline of any of the discourses translated by Ficino. The main subjects of those treatises are *cosmogony*, the origin of the world and the notion of a divine creation; *cosmology*, especially the nature of matter and place; *theology*, the existence, attributes, and names of God; *ethics*, the moral properties of God, cosmos, and man; *anthropogony* and *anthropology*, man's origin, nature, and place in the universe; *psychology*, the faculties of mind and soul in man and elsewhere; *soteriology* and *eschatology*, the return of man's soul to God, presupposing its fall and depending on revelation and contemplation as links between man and the various hierarchies of being.[5]

Ficino, who knew those themes of the Greek *Hermetica* better than anyone else in his day, also based a theory of magic on philosophy. But only a few passages of those Hermetic writings can have given him any philosophical help.

The compendious tenth treatise, called "The Key," describes a community of action among the hierarchies where "energies are like rays of god, natural forces like rays from the cosmos, … and the energies work through the cosmos and upon mankind through the natural rays of the cosmos, but natural forces work through the elements." The same passage, while stressing astrological unity in the cosmos, may also suggest a distinction between occult properties powered by celestial influence and manifest properties built into the elements. Near the beginning of the *Asclepius*, describing the divine force that ties the cosmos together, Hermes alludes to 'fitness' (*epitêdeiotês*), the notion that two natural objects, like stones or plants, have secret affinities with a higher power that also connect them to one another: fitness with the same higher power makes a match between things below, thus eliminating the need for some local agent – a magus, for example – to produce that link, which is always already there. The Hermetic author may also be hinting at the idea of astrological *seirai* or 'chains':

> The heavens, a perceptible god, administer all bodies.… But God, who is their maker, is himself governor of heaven and of soul itself and of all things that are in the world. From all these, all governed by the same God, a continuous influence carries (*frequentatio fertur influens*) through the world and through the soul of all kinds and all forms throughout nature. God prepared matter as a receptacle (*receptaculum*) for omniform

> forms, but nature, imaging matter with forms by means of the four elements, causes all things to reach as far as heaven so that they will be pleasing in the sight of God.

To find the magic in this passage takes some work, however.[6]

To begin, 'receptacle' (*receptaculum*) in Latin may stand for *hupodochê* in the original Greek of the *Asclepius*. That same Greek word occurs in the sixteenth discourse – not translated by Ficino – which describes the soul as "a receptacle fit for god" (*epitêdeion eis hupodochên tou theou*): this takes us to 'fitness' (*epitêdeiotês*), a term of art for philosophers who theorized about magic in Greek. Speaking of the gods, Proclus writes that "if some earthly thing is fit (*epitêdeion*) to share in them, even to that thing are they present." We can also read the *Asclepius* passage as part of a distinct section of the whole work, depicting the cosmos as a continuous hierarchy of divine life and power.[7]

A later recurrence of the same theme adds that "all things from bottom to top reach out to one another and link together in mutual connections (*sibi conexa sunt*)." From *conexa* to *nexus* is a small step, leading to a Latin word (*nexus*, 'bond') that is close to the Greek *seira* or 'chain' – another term of art in the *Chaldaean Oracles* and Neoplatonic commentary. "The chain (*seira*) is one," says Proclus, "and so is the order (*taxis*), the whole of which gets its descent into the manifold from the monad." A similar metaphysics rules in the world of the *Asclepius*, where, since "all are governed by the same god," the magus can tap into "a continuous influence." As Proclus puts it: "each thing hangs on the gods, some illuminated by one divinity, some by another, and the chains *(seirai)* go down to the last."[8]

But the second *Asclepius* passage is dismally corrupt. Even if Ficino and his contemporaries could make sense of it, they lacked the information and techniques that modern scholars need to interpret such baffling texts accurately. In the *Asclepius* the main puzzle is textual, but for the works of Proclus the salient problems are philosophical. If hints and allusions connect such texts, could readers in Ficino's day find those clues? The question is hard to answer. There is no doubt, however, that Ficino and others saw magic in the two god-making passages of the *Asclepius*, where Hermes explains that the magical power of the gods that move the statues also stirs in "plants, stones and spices … that have in them a natural power of divinity" attuned to the heavens and sensitive to celestial prayer and music.[9]

And yet none of these texts – including the god-making passages – gives a clear, full, and explicit answer to someone who wants physical or metaphysical reasons for believing in magic. The *Hermetica* do not explain *why* belief in magic is justified philosophically, even though they suggest

that magic was part – though not a large or important part, evidently – of what Hermes taught, and so must be very old and sanctified by his venerable name. If the *Korê Kosmou*, hoping that "philosophy as well as magic might nourish the soul," promises a philosophical account of magic, the promise is not kept elsewhere in the Hermetic Corpus. To Ficino and his Quattrocento readers, of course, even that unkept promise was unknown since the Hermetic fragments collected by John of Stobi in the fifth century and containing the *Korê Kosmou* were not published until the sixteenth century.[10]

2 A THEORY OF MAGIC

Ficino's account of magic in *De vita 3* is philosophical, medical, and scientific, though 'natural philosophy' is a better term than 'science' for his views on cosmology, astronomy, physics, matter theory, geology, and biology. They were all parts of philosophy in his day, not yet autonomous sciences. Since Ficino was a physician and a philosopher but also a scholar, he knew how to hunt in the ruins of ancient wisdom for the foundations of magic. But the Hermetica give only incidental attention to magic; most scientific questions get even skimpier treatment; and the philosophy in them is at best eclectic, at worst incoherent. The disorder of the Hermetic scriptures was a worry even for their authors: Asclepius opens the sixteenth *logos* – which Ficino did not translate – by confessing that this speech of his "contradicts even some of my own discourses."[11]

Ficino's admiration for these texts is explained not by his interest in magic but by his mistaken theory of history and his eclectic optimism. He respects Hermes – erroneously – as a sage of the remotest antiquity, and he likes the Hermetic texts for their happier moments when they seem to be preaching sermons compatible with a cheerful Christian gospel, along such lines as these: the human soul is immortal and a part of divine creation; through sin and the allurements of matter, however, man has fallen; but fallen mortals can be redeemed because their evil is not absolute. Finding such a revelation in works thought to be of Mosaic age also redeems Hermes, Asclepius, and their pagan retinue.[12]

Magic was also to be salvaged by Ficino's erudition, but since the rescue required science and philosophy, this could not be done by mastering the Greek Hermetica – as Ficino surely did. But he was also the greatest expert of his age on Neoplatonism, a philosophy rich in discussions of magic. Were Plotinus and his successors better guides to magic than Hermes? When Frances Yates faced that question, what she saw

in Neoplatonism was "a rather vague eclecticism"– until Ficino made Platonism itself Hermetic! Speaking of the Platonism revived by Ficino in the Renaissance, she maintains "that the core of [this] … movement was Hermetic, involving a view of the cosmos as a network of magical forces with which man can operate."[13]

In a chapter that kept historians of science busy for decades, Yates cites passages of the Hermetica to underwrite her presentation of the magus as operator-scientist. To begin, speaking of the first Greek discourse translated by Ficino, she maintains that it narrates "the creation, fall and redemption not of a man but of a magus." There is no textual evidence at all for this claim about a Hermetic magus. Next, she writes that "the magical passages in the *Asclepius*" are the basis of "the magical practices which [Ficino] describes in his *De vita*." Those two passages are conspicuous in Ficino's presentation, to be sure, but they are problems for him to solve, not a platform to be mounted. Finally, she cites the twelfth Greek discourse, where the earth is "full of motion and also stationary," to show that Giordano Bruno linked "Copernicanism with the animist philosophy of an extreme type of magus." But any such linkage gets no support from what Hermes says to Tat in this treatise.[14]

To find the philosophical and scientific roots of Renaissance magical theory – as apart from the genealogy of the magus – the muddled pieties of Hermes Trismegistus are not the place to look. Better to search the Neoplatonists. In the same way that Platonic, Aristotelian, and Stoic teachings on substance, form, quality, matter, and motion provided theoretical frameworks for science in late antiquity, by the time of Bolos Demokritos around 200 BCE – people were also constructing physico-philosophical theories of magic. Their remains are scattered: Apuleius in his *Apology*, Plotinus in *Ennead* 4.3–4, Iamblichus *On the Mysteries*, Synesius *On Dreams,* and writings by Pliny, Galen, and others show what they were like.[15]

Much of this material was known to Ficino. In fact, he seems to have been the only Renaissance reader to comment on the Greek original of a very informative statement of ancient magical theory, the work of Proclus that he calls *On Sacrifice*. Titled *Peri tês kath' Hellênas hieratikês technês* in the modern edition, this little tract of 105 lines is probably a précis made by Michael Psellus of a larger work by Proclus: *On the Priestly Art According to the Greeks*. The art (*technê*) described there is called priestly (*hieratikê*) because it is the sacred theurgy of the *Chaldean Oracles*. The aim of this hieratic art is religious – immortalization and union with

the god – but its basis is scientific and philosophical because it provides a coherent picture of cosmology, physics, and metaphysics.[16]

Ficino made his copy of the Greek text sometime after 1461 and completed his Latin translation by 1489, around the time when he wrote *De vita 3*. But he did not publish *On Sacrifice* until 1497, along with the commentary on *Alcibiades I* by Proclus, *On Mysteries* by Iamblichus and other mostly Neoplatonic works.[17]

Because the text is short, important and hard to find, I give a full translation of the Greek in the following section.

3 ON THE PRIESTLY ART

(1) Just as lovers systematically leave behind what is fair to sensation and attain the one true source of all that is fair and intelligible, in the same way priests – observing how all things are in all from the sympathy that all visible things have for one another and for the invisible powers – have also framed their priestly knowledge. For they were amazed to see the last in the first and the very first in the last; in heaven they saw earthly things acting causally and in a heavenly manner, in the earth heavenly things in an earthly manner.

(2) Why do heliotropes move together with the Sun, selenotropes with the Moon, moving around to the extent of their ability with the luminaries of the cosmos? All things pray according to their own order and sing hymns, either intellectually or rationally or naturally or sensibly, to heads of entire chains. And since the heliotrope is also moved toward that to which it readily opens, if anyone hears it striking the air as it moves about, he perceives in the sound that it offers to the King the kind of hymn that a plant can sing. In the earth, then, it is possible to see Suns and Moons terrestrially, but in heaven one can also see celestially all the heavenly plants and stones and animals living intellectually.

(3) So by observing such things and connecting them to the appropriate heavenly beings, the ancient wise men brought divine powers into the region of mortals, attracting them through likeness. For likeness is sufficient to join beings to one another. If, for example, one first heats up a wick and then holds it under the light of a lamp not far from the flame, he will see it lighted though it be untouched by the flame, and the lighting comes up from below.

(4) By analogy, then, understand the preparatory heating as like the sympathy of lower things for those above; the bringing-near and the proper placement as like the use made of material things in the priestly art, at the right moment and in the appropriate manner; the communication of the fire as like the coming of the divine light to what is capable of sharing it; and the lighting as like the divinization of mortal entities and the illumination of what is implicated in matter, which things then are moved toward the others above insofar as they share in the divine seed, like the light of the wick when it is lit.

(5) The lotus also shows that there is sympathy. Before the Sun's rays appear, it is closed, but as the Sun first rises it slowly unfolds, and the higher the light goes the more it expands, and then it contracts again as the Sun goes down. If men open and close mouths and lips to hymn the Sun, how does this differ from the drawing-together and loosening of the lotus petals? For the petals of the lotus take the place of a mouth, and its hymn is a natural one.

(6) But why talk of plants, which have some trace of generative life? One can also see that stones inhale the influences of the luminaries, as we see the sunstone with its golden rays imitating the rays of the Sun; and the stone called Bel's eye (which should be called Sun's eye, they say) resembling the pupil of the eye and emitting a glittering light from the center of its pupil; and the moonstone changing in figure and motion along with the Moon; and the sun-moonstone, a sort of image of the conjunction of these luminaries, imitating their conjunctions and separations in the heavens.

(7) All things are full of gods, then: things on earth are full of heavenly gods; things in heaven are full of supercelestials; and each chain continues abounding up to its final members. For what is in the One-before-all makes its appearance in all, in which are also communications between souls set beneath one god or another.

(8) In this way, consider the multitude of solar animals, such as lions and cocks, which also share in the divine, following their own order. It is amazing how the lesser in strength and size among these animals are regarded with fear by those greater in both respects. For they say the lion shrinks from the cock. The cause of this is not to be grasped from appearances but from intellectual insight and from differences among the causes. In fact, the presence of heliacal symbols is more effective for the cock: it is clear that he perceives the

solar orbits and sings a hymn to the luminary as it rises and moves among the other cardinal points.

(9) Accordingly, some solar angels seem to have forms of this same kind, and though they are formless they appear formed to us held fast in form. Now if one of the solar demons becomes manifest in the shape of a lion, as soon as a cock is presented he becomes invisible, so they say, shrinking away from the signs of greater beings, as many refrain from committing abominable acts when they see likenesses of divine men.

(10) In brief, then, such things as the plants mentioned above follow the orbits of the luminary; others imitate the appearance of its rays (the palm, for example) or the empyrean substance (the laurel, for example) or something else. So it seems that properties sown together in the Sun are distributed among the angels, demons, souls, animals, plants and stones that share them.

(11) From this evidence of the eyes, the authorities on the priestly art have thus discovered how to gain the favor of powers above, mixing some things together and setting others apart in due order. They used mixing because they saw that each unmixed thing possesses

Figure 25. Snake-footed Cock: Abrasax Amulet.
(Meijer [1904], I, 58)

some property of the god but is not enough to call that god forth. Therefore, by mixing many things they unified the aforementioned influences and made a unity generated from all of them similar to the whole that is prior to them all. And they often devised composite statues and fumigations, having blended separate signs together into one and, by unifying many powers, having made by artifice something embraced essentially by the divine, the dividing of which makes each one feeble, while mixing raises it up to the idea of the exemplar.

(12) But there are times when one plant or one stone suffices for the work. Flax-leaved daphne is enough for a manifestation; laurel, box-thorn, squill, coral, diamond or jasper will do for a guardian spirit; but for foreknowledge one needs the heart of a mole and for purification sulfur and salt water. By means of sympathy, then, they draw them near, but by antipathy they drive them away, using sulfur and bitumen for purification, perhaps, or an aspersion of sea water. For sulfur purifies by the sharpness of its scent, sea water because it shares in the empyrean power.

(13) For consecrations and other divine services they search out appropriate animals as well as other things. Starting with these and others like them, they gained knowledge of the demonic powers, how closely connected they are in substance to natural and corporeal energy, and through these very substances they achieved association with the demons, from whom they returned forthwith to actual works of the gods, learning some things from the gods, for other things being moved by themselves toward accurate consideration of the appropriate symbols. And then, leaving nature and natural energies below, they had dealings with the primary and divine powers.

4 CHAINS, ORDERS, AND EROS

Without ever identifying it by title, Ficino uses this work by Proclus a half-dozen times or more in *De vita 3*, crucially in chapters 13 through 15 of that book to show how celestial influence can be directed through common terrestrial objects properly understood and arranged. From the god-making passages of the *Asclepius*, he already knew that "plants and stones and spices" could be used to make magic. But Proclus provides a coherent framework for that isolated assertion by the Hermetic author. The principle in play, as Ficino sees it, is Platonic: "that entirely Platonic maxim … that heavenly things exist on earth in an earthly condition,

while earthly things in turn attain a heavenly dignity in heaven," reflecting the first paragraph of *On Sacrifice*. The context follows in ¶ 2 on 'orders' and 'chains,' amplified by ¶ 7 on chains and ranks of gods – compressed statements that must be read with longer writings by Proclus, especially the *Elements of Theology*.[18]

In that work – a formal presentation of Platonic metaphysics that does not deal directly with magic – Proclus lays out a double hierarchy for all being, describing its patterns sometimes as *seirai* or 'chains,' sometimes as 'orders' or *taxeis*. Both aspects of the hierarchy flow from higher entities called 'monads' and 'henads,' the latter identified with various Olympian gods. Through both registers of the structure, divine power descends from above even to the lowest members of an order or chain. As Proclus puts it in the *Elements*, "the distinctive character of any divine order (*taxeôs*) travels through all the derivative existents and bestows itself upon all inferior kinds." This is what Ficino has in mind when he writes that

> from each and every star there hangs a series of things proper to it, even to the very lowest. Under the heart of Scorpio, after its demons and its men and the animal scorpion, we can also locate the plant aster, … which the physicians say has … amazing power against genital diseases.… Under Sirius, a solar star, come first the Sun, then Phoebean demons as well, which sometimes appeared to humans in the form of lions or cocks, as Proclus testifies.… And there is no reason why the lion fears the cock except that in the Phoebean order the cock is higher than the lion. For the same reason, says Proclus, the Apollonian demon, which sometimes appeared in the shape of a lion, immediately vanished when a cock was displayed.

Paragraphs 7–9 of *On Sacrifice*, read with help from the *Elements*, clarify Ficino's point. The lion and the cock are in the same solar series whose henad is Apollo or Phoebus – the lion probably because of solar associations of the constellation Leo in astrology, the cock because he crows at sunrise. Since the cock is a creature of the air, he stands higher in the series: his proximity and receptivity to the Sun show in his behavior. Other members of the solar series enumerated here by Ficino – the laurel, lotus, sunstone, and sun's eye – also come from Proclus (¶ 5–6, 10, 12). Ficino includes a long list of heliotropic items in the first chapter of *De vita*, emphasizing the importance of this solar series for his magic.[19]

The chains or orders that link terrestrial to celestial entities are a metaphysical armature for astrological magic: this notion is at the core of a philosophy that is above all systematic. Proclus was no fatuous theosophist. Besides his original philosophy and his commentaries on Plato, he made

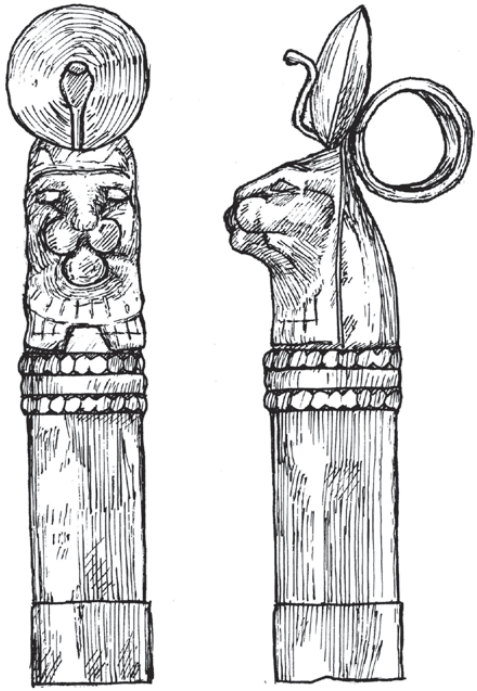


Figure 26. Lion-headed Sekhmet Amulet Case, Ptolemaic? (British Museum, 1856, 1223.1399)

important contributions in mathematics, physics, and astronomy. Unlike the Hermetica, his writings cannot be dismissed as eclectic, inconsistent, or superficial. Like Porphyry and Iamblichus, he cares more about magic than Plotinus, but he is faithful to Plotinus in trying to ground his beliefs and practices in philosophy. His high regard for theurgy, which Plotinus never mentions, matches his distinctive ontology and psychology, the latter developed in conscious opposition to Plotinus.[20]

His readiness to theorize is evident throughout the pamphlet *On Sacrifice*. The claim in ¶ 3 that "likeness is sufficient to join beings to one another" complies with a philosophical rule that there can be no causality without similarity between cause and effect. In Proclus's universe, moreover, similarities proliferate in keeping with the maxim "that all things are in all": this opening proposition of *On Sacrifice* (¶ 1) reflects proposition 103 of the *Elements*. The intricate metaphor of the wick in ¶ 3 and 4 supports a natural, non-demonic magic depending only on dispositions naturally present in objects. Another philosophical rule – that unity is prior to multiplicity – lies behind the advice in ¶ 11 that magic concentrates,

unifies, and blends what nature leaves divided. The signs or symbols (*sunthêmata, sumbola*) of ¶ 8 and 9 – as we know from Plotinus and Iamblichus – work *ex opere operato*, providing an alternative to the risks of an intentional act that might expose the magus to the worst demonic dangers.[21]

Proclus is always happy to theorize, but *On Sacrifice* also shows how empirical evidence serves the magician, not to save the phenomena as freshly observed ("the cause of this is not to be grasped from appearances,"¶ 8) but to confirm magical theory as saving the phenomena that tradition has recorded. Hallowed lore teaches the magus that "laurel, box-thorn, squill, coral, diamond or jasper will do for a guardian spirit," while "for foreknowledge one needs the heart of a mole and for purification sulfur and salt water." Although sympathy is the ruling principle in magic, antipathy also operates: sulfur's purifying power is antipathetic, and the desired result is to separate, not to unify. Antipathy and sympathy in counterpoint explain the magic that purifies with sulfur. But sulfur comes listed with other items customarily prized as magical, so that data, theory, and tradition reinforce one another.[22]

The magical theory that stands on empirical evidence affirmed by tradition also appeals to common experience – indeed, universal human experience in the case of love. Eminent authority for the theory is established at the beginning and end of *On Sacrifice* (¶ 1, 13) by allusions to Diotima's conversation about love with Socrates in the *Symposium*. Diotima begins by calling Love one of the spirits who mediate between heaven and earth and "form the medium of the prophetic arts, of the priestly rites of sacrifice, initiation and incantation, of divination and of sorcery." Love, she explains, is "an adept in sorcery, enchantment and seduction." Then she ends her discourse with an account of Love's ascent from sensible to abstract to authentic beauty. This is why Proclus starts by comparing lovers with priests and finishes by rising to the ideal. The magic of *On Sacrifice* depends on manipulating sensible objects, but natural magic rooted in experience becomes an erotic embrace of the insensible divine.[23]

Ficino identifies love with magic while also seeing magic in cosmological or scientific terms. Because God's love created and vitalized the world, understanding the world is a way to know and love God: cosmology leads to natural theology. Let Ficino explain how magic, far from being unscientific or anti-religious, is at the center of his Christian universe. "Why," he asks in his commentary on the *Symposium*,

> do we think that Love is a magician? Because all the power of magic consists in love. An act of magic is the attraction of one thing by another in accordance with a certain natural kinship. The parts of this world,

> members of one living being, all originating from the same maker, are joined together in the communion of one nature. Therefore, just as our brain, lungs, heart, liver, and other organs act on one another, assist each other to some extent, and suffer together when any one of them suffers, in just this way the organs of this enormous living being, all the bodies of the world joined together in like manner, borrow and lend each other's natures. Common love grows out of common kinship, and common attraction is born of love. This is true magic. Thus, out of an agreement of nature, fire is drawn upward by the hollow of the lunar sphere, air by the hollow of fire; earth is drawn to the depths by the center of the world, and water likewise is pulled by its place. The magnet does the same with iron, amber with chaff and sulfur with fire. … Acts of magic are acts of nature, then, and art is her handmaid. … Out of natural love all nature gets the name 'magician.'[24]

In the concluding chapter of *De vita*, Ficino treats the same question in a strikingly similar fashion, but this time he comments on the final sections of *Ennead* 4.4, one of the main inspirations of the whole treatise:

> Everywhere Nature is a magician, as Plotinus and Synesius say, everywhere baiting traps with particular foods for particular objects; this is no different from her attracting heavy things with the center of the Earth, light things with the sphere of the Moon.… Wise men in India claim that this is the attraction by which the world binds itself together, and they say that the world is an animal, throughout male and female alike, and that it joins with itself everywhere in the mutual love of its members.… Taking careful note of such things, the farmer prepares his field and seeds for gifts from heaven and uses various grafts to prolong life in his plant and change it to a new and better species. The physician, the scientist and the surgeon bring about similar effects in our bodies, both to take care of our ills and to make a more fruitful disposition of the nature of the cosmos. The philosopher, who is learned in natural science and astronomy and whom we are wont rightly to call a magician, likewise implants heavenly things in earthly objects by means of certain alluring charms used at the right moment, doing no more than the farmer diligent in grafting, who binds the fresh sprout to the old stump.… The magician sets earthly things under heaven, subjects all things below to those above, so that everywhere female entities are fertilized by the male entities suited to them.[25]

Talk about the physical world seems a strange setting for the word 'love,' and Ficino's language sounds all the more bizarre when he makes 'love' and 'magic' near synonyms for the forces of kinship and attraction that grow out of the divine creative act and sustain the organic sympathies that

bind the cosmos together. Both love and magic are forces, however: they drive the motions of the heavenly bodies, cause the changes of elements, humors, and compounds and power the mutual attraction of all these organs of the living cosmos. Love in Ficino's physics, spirit (*pneuma*) in Stoic physics, and force in Newton's physics have analogous, though not identical, roles. Ficino's love lacks both the explanatory power of Newton's force and the systematic coherence of the Stoic *pneuma*, but all three are terms of scientific intention that aim to explain puzzling features of nature.[26]

Ficino's ideas about erotic magic are not idiosyncratic. They come from his Platonism. "Love is given in Nature," Plotinus teaches, and "the qualities inducing love induce mutual approach: hence there has arisen an art of magic … that knits soul to soul." In his immanentist, anti-Gnostic moments, Plotinus insists on the organic unity of the world and on the erotic forces binding it together, just as Proclus does in his booklet *On Sacrifice*, with allusions to the *Symposium*. Attention to the philosophy, cosmology, and theology in Ficino's magic reveals a theory that means to respect religious probity, scientific evidence, and philosophical reasoning. Those same norms are honored by *On Sacrifice*, and – though the resonance of love with magic and physics may be silent for us – it rang loud for Ficino and his contemporaries.[27]

5 EXPERIMENTS

Besides the texts of *On Sacrifice* and *De vita 3*, other evidence for the influence of the former work on the latter comes from Latin marginalia written by Ficino in the best Greek manuscript of Proclus's treatise. Opposite ¶ 1 of *On Sacrifice*, Ficino notes that works by Porphyry, Mercurius, Plotinus, Iamblichus, and al-Kindi contain similar material. Next, glossing ¶ 2–4, he applies the concept of an order (*taxis*) within and among various groups (*ordines, taxeis*) of corporeal and incorporeal entities in upper and lower regions of the cosmos. Since he understands magic as a system of organic relations among the heavenly and earthly stones, plants, and animals of Proclus's treatise, he chooses a biomedical analogy to illustrate this relation. Something high in the cosmos, like a star, influences a lower thing, like a human body, as one organ of the body affects another, especially when the two organs are linked by an object suited to each that can also transmit a quality of one organ to the other. "If you apply cerebral objects to the foot," he explains,

> this attracts power from the brain; if they are cardiac objects, it comes from the heart; if hepatic objects, from the liver, and so on. Likewise, if a particular nature is deficient in a person, you attract power from one star or another by bringing near to him what suits the star, especially a star at the peak of its influence.[28]

In the margin next to ¶ 6–8, where Proclus describes chains, symbols, and the lion's fear of the cock, Ficino's notes discuss the power of material objects, sounds, imagination, emotion, and reason to draw down natural and demonic forces from the heavens. All this is familiar. More distinctive marginalia comment on the lotus, sunstones and moonstones in ¶ 5–6:

> I have seen a round stone marked with star-like dots which, when soaked in vinegar, moved first in a straight line for a bit and then wandered off on a curved course. I believe it was adapted to the firmament, especially after it was soaked in vinegar. For here it is fitting that art should finish what nature has begun. Why is the magnet suited to the Bear and the Pole? Why does it incline iron toward them, as it seems to seek out the pole in the sailor's instrument? Whence does an image of the Bear impressed on a magnet and hung about the neck on an iron necklace attract power from the constellation to us as it touches the flesh?

This material is the seed of chapter 15 of *De vita 3*, which recounts two of Ficino's personal experiences with talismans. Having Proclus's description of the sunstones and moonstones and knowing the philosophical context, he could draw the inference that opens this chapter – that carving images on such stones is needless since their effects come spontaneously from natural sympathies flowing through the chains and orders of the universe.[29]

But he hopes that solar and lunar stones might be as potent in their orders as the magnet and iron are "under the series (*series, seira*) of the North Pole," which is also "the order following the Bear." Struck by the magnet's lively behavior in the mariner's compass, he explains it by the relative positions of magnet and iron in their order. High attracts low. He had also thought about making a talisman out of a magnet by carving the Bear on it under the influence of the Moon. But when he realized that the influences of the Bear are Saturnine and Martial, and when he remembered from the Platonists that the demons of the North are usually evil, he dropped his plans. Meanwhile, in Florence he saw what amounts to a natural talisman, "a stone brought from India, extracted there from the head of a dragon, round, coinshaped, naturally

Figure 27. Crinoid Fossils: Ficino's Stone from India? (Fearnhead [2008], from fig. 2)

and symmetrically marked with many star-like dots." Observing the stone (perhaps a crinoid fossil) circling in vinegar, he reasons that it is like the sinuous constellation Draco, a heavenly neighbor of the Bear. Both the artificial Bear talisman and the natural Dragon talisman are joined in Ficino's reckoning with the magical sun- and moonstones of Proclus.[30]

Ficino's test of the dragon-stone confirms a theory of magic better supported by the short treatise *On Sacrifice* of Proclus than by anything in the Greek Hermetica. There is no reason to call this magic 'Hermetic' but much evidence for calling it 'Neoplatonic.'

The justification that Ficino's Hermetica provide for magic is genealogical, historical, or doxographic – not theoretical. Association with the ancient theology helped make magic respectable until Isaac Casaubon debunked the chronology, but the most ancient of the ancient theologians – Hermes, Zoroaster, Orpheus – were never useful for analyzing magic scientifically or philosophically. Even where allusions by Hermes and his companions to magical ideas may link magic with Hermetic episodes of the ancient theology, they do not provide the physical or philosophical arguments that could support a robust theory of magic.[31]

Since Ficino's Hermetica – meaning the Greek treatises that he translated – say little about magic, they should not be used to prolong the error of using 'Hermetic' and related terms as vaguely synonymous with 'magical' and its cognates. Plotinus, Porphyry, Iamblichus, Synesius, and Proclus are the most important philosophical authorities among the ancients for the theory of magic in the Renaissance, insofar as that theory differs from medieval ideas. But insofar as Renaissance magic is like medieval magic, the theories have Aristotle in common as their philosophical guide. Any account of Renaissance thinking about magic must respect Ficino's reverence for all those ancient sages. His magic was part and parcel of his philosophical, theological, and medical erudition – never a throwback to a primitive way of thinking.[32]

CHAPTER SIX

SCHOLASTIC PHILOSOPHY IN FICINO'S MAGIC

> Sometimes a higher nature
> may indeed be reconciled with a lower,
> but it cannot be constrained.[1]

1 WHAT DOES A CHRISTIAN WANT WITH MAGIC?

Marsilio Ficino finished the third of his *Three Books on Life* in July of 1489. A few months later, he felt obliged to write an *Apology* for his new theory of magic and medicine. Though his work *On Life* would be the most popular of his original writings, *De vita 3* worried Ficino from the moment he released it. The *Apology* shows that he was particularly anxious about religious orthodoxy. Among his critics he expected many to be ignorant and some malevolent:

> One of them will say, 'Isn't Marsilio a priest? Of course he is. Of what interest is medicine to priests, then? On the other hand, what business have they with astrology?' Likewise, another will ask, 'What does a Christian want with magic or talismans?'

Ficino's young friend, Pico della Mirandola, was already in disgrace with the Church because of his public statements about magic and Kabbalah, so the older philosopher had good reason to fear such interrogations.[2]

They are not the questions we would ask if a thinker of Ficino's stature were to advocate magic today. Since the Enlightenment, magic has lost cultural authority for most educated people in the West. In our time, an intellectual who seriously claims to believe in magic will undermine her own seriousness. One reason why magical beliefs have become literally incredible is that their philosophical foundations have been discarded.

But in Ficino's day the foundations were intact. He and others were still enlarging them.[3]

The *Apology* mentions that *De vita 3* grew out of a commentary on the *Enneads* of Plotinus: Ficino's book, the most important statement of magical theory written since antiquity, began as an excursus from a difficult work of philosophy. The theory presented in *De vita 3* relies on Plotinus, Proclus, and other Neoplatonists but not on Ficino's celebrated discovery, the Greek Hermetica, which have little to say about magic and whose philosophical content is banal, eclectic, and incoherent. Other features of Ficino's magic outside the scope of Neoplatonism are technical matters widely discussed in the philosophical and medical writing of the Middle Ages. Ficino's religious anxieties moved him to advertise his allegiance to one important segment of this literature, the theology of Thomas Aquinas and his followers. But Thomas and other medieval thinkers also sustained Ficino's magic in a philosophical way, unwittingly fulfilling the old Hermetic hope that "that philosophy as well as magic might nourish the soul and medicine heal the body."[4]

2 THE WHOLE SUBSTANCE

De vita 3 gives a list of stones – emerald, jasper, sapphire, topaz, coral, eagle-stone, and others – whose power to prepare the human spirit for the reception of celestial influence depends not just on "qualities recognized by the senses but also and much more on certain properties … hidden from our senses and scarcely at all recognized by reason." Elsewhere in the same work, these hidden properties (*proprietates occultae*) of stones, plants, animals, and other physical things are distinguished from manifest (*manifestae*) properties belonging to the elementary constituents of things, accessible to the senses and understood by reason. From antiquity, the most authoritative source of this distinction between *manifest* and *occult* properties is none of the experts on philosophical magic whom Ficino knew so well, but the physician Galen, whom he also knew.[5]

Substances discussed in Galen's pharmacological works – foods, poisons, antidotes, amulets, drugs that are purgative, attractive, anodyne, and hypnotic – are said to work by a "certain power of attraction" or by "undescribable properties" or, more frequently, partly "because of a property of the whole substance, … partly because of their active qualities." Normally, this action by the whole substance contrasts with effects of qualities (hot, cold, dry, wet) associated with the four elements (fire, air,

water, earth). Drugs and other items that work through their elementary qualities can be studied by the rational methods of medicine and philosophy. But others, known only empirically and not by a rational method, are called "undescribable" because the learned physician cannot account for them. Yet Galen has no doubt that cures by the whole substance work – in a way that he calls "amazing."[6]

A pseudo-Galenic work *On the Diagnosis and Cure of Kidney Diseases* summarizes this doctrine, which is entirely consistent with the genuine treatises:

> When the force of necessity requires it, one must give way to the undescribable remedies (*arrhêta*) of the ancients, those acting from the whole substance (*kath'holên tên ousian*), discovered from irrational practice and experience (*ek peiras kai alogou tribês*).... These include an enormous number of medicines, both simple and composite, many of which are disgusting. Unreasoning practice has found them in nature or by fortune ... or in dreams or oracles ... or from other things empirically presented. But since for us these are all undescribable (*arrhêta*), it is best not to put too much faith in them since the manner of their usefulness is unknown.... Whoever would be a physician must act according to reason (*kata logon*), making proud and confident use of what works because of active qualities, powers and operations, as the power of hot, cool, dry and moist is understood in the method (*methodou*).... Since for the most part the matter of medicines made from crushed stones is describable (*rhêtê*), it is better to use them than those that are undescribable (*arrhêtois*), ... and since the latter are mainly without effect, it befits us as Christians to have recourse to our own mighty doctrines, the true mysteries.[7]

This Christian conclusion may help us understand Ficino's stand on the mysterious powers of the unbroken stones that are described here by contrast with stones that are crushed to make medicine. The Christian physician's account of broken stones as "describable" is like texts of Galen that treat stones ground up for medicinal use as known by reason and acting through the four qualities, while those left intact are known only empirically and work through the whole substance. The same distinction is implicit in the famous manual of pharmacology by Dioscorides, especially in the section on stones and minerals. Most of the advice is to alter mineral substances in some way that makes them consumable internally or applicable topically – usually grinding followed by dissolving in a liquid. But Dioscorides also recommends wearing moonstone and jasper as amulets, not grinding and consuming them. Perhaps the grinding,

Figure 28. Whole Peony with Roots.
(Gerard [1633], p. 982)

by reducing the whole stone to smaller parts, gives access to qualities that stay locked up in gems that cannot be ground. To hold and retain a carved image, however, a gem too hard to crush may work better than a softer stone.[8]

Dioscorides and Galen, in their unmystical way, accept plants and stones as amulets. Galen experimented with amulets to test their properties. If a peony root's power to cure epilepsy is real – either because small parts of it are inhaled or from its effects on the ambient air – removing a root hung around the neck of an epileptic whose symptoms have been relieved by the peony should let the symptoms return. Galen gives no such reductive analysis of a green jasper amulet that cures stomach ailments, perhaps because jasper is hard and solid. In Galen's day, stomach trouble was commonly treated by amulets. One of the most popular was the gem called 'chnoubis,' probably a corruption of an Egyptian word. The lion-headed serpent on the chnoubis crowned with the Sun's rays is probably an Egyptian solar image. Galen learned about the "ray-bearing

serpent" from King Nechepsos, a legendary oriental sage whose name recurs in the magical literature of late antiquity. Galen's tests of the chnoubis convinced him that the image has no effect on the genuine powers of the stone that bears it. As a physician, he is indifferent to figures on amulets.[9]

But as a Christian priest, Augustine is hostile to all amulets, decorated or not:

> It is one thing to say that if you drink this herb after it has been crushed, your stomach will not hurt, but quite another to say that your stomach will not hurt if you hang the herb about your neck. The one is approved as a preparation that brings health; the other is a token of superstition and condemned.

Questions of religious legitimacy as well as medical efficacy turn on properties and appearances of stones, plants and other objects meant for therapeutic use.[10]

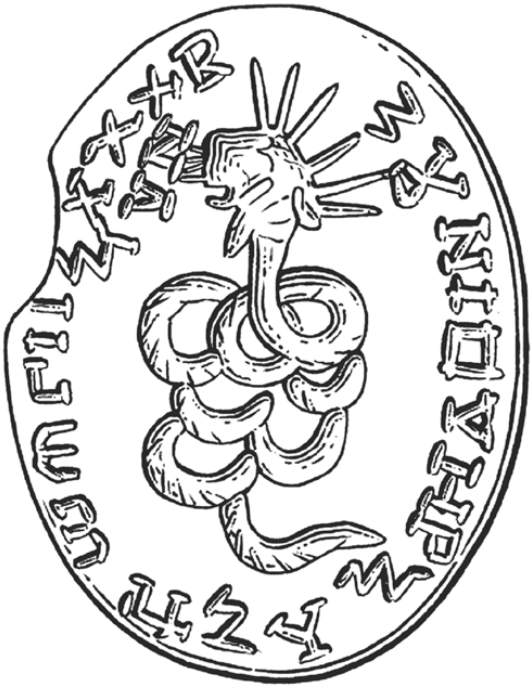


Figure 29. Chnoubis, Chalcedony, Third Century CE. (Campbell Bonner Magical Gems Database, CBd-144)

That hardness and other physical properties of stones should feature in Ficino's accounts of them follows from his conception of *De vita 3* as an 'art of physic,' covering natural science in general as well as physics and medicine in particular, and also from his claim that the magus who knows how to manipulate stones is an expert in natural philosophy. That this expertise is partly empirical – even for the great Platonist – shows in his descriptions of the dragon-stone that he soaked in vinegar to watch it snake across a table top. The stone's gyrations – it was probably a carbonate fossil – remind him of a serpent twisting like Draco, the constellation, and the little star-like dots on the stone confirm its link with the stars. Although the event and his careful records of it are striking, systematic empiricism is not Ficino's usual way. His intentions are scientific, however, when he tries to save the phenomena – whether or not he has observed them, whether or not we have long since written them off as delusions – by putting them in the context of well-established physical and metaphysical theory.[11]

Transparency is a property of gems that Ficino handles in this way. Aristotle associates the transparent or the diaphanous with "the uppermost shell of the physical cosmos." Light is the activity of the substance of this shell, and "it exists wherever the potentially diaphanous is excited to actuality by the influence of … something resembling the uppermost body." This persuades Ficino that a relatively transparent gem like carbuncle is not only "a proper receptacle of light" but also a good receiver and container for celestial influence – an astral capacitor.

But carbuncle is also hard, and Ficino thinks that harder materials are resistant to external influences, heavenly or not, though they are also apt to retain whatever they receive. Two examples show the limits on resistance: first, a lightning bolt melts a piece of metal wrapped in leather while the leather stays intact; second, a sword striking wood wrapped in wool dents the wood without cutting the wool. This is to demonstrate that "in the very act of resisting a more powerful cause, a harder material makes itself more vulnerable to such forces," so that "the hardest bodies are the weakest against celestial influence." Hard materials, in other words, are permeable to astral influence and therefore adequate receivers.[12]

But when Ficino ranks items capable of attracting and transmitting celestial influence, "harder materials like stones and metals" come in last, and then the scale rises through organic matter; powders, vapors, and smells; sounds, words, and song; acts of imagination; acts of reason; and acts of contemplation. Galen and the author of the treatise on kidney

disease dislike amulets because their powers are explained only globally by the whole substance, not distinctly by qualities and elements. But Ficino, while accepting that stones have power, devalues them in a different way. His low ranking of stones expresses the typical Neoplatonic contempt for matter as remote from the highest entities and unlike them both ontologically and morally. For Galen, action by the whole substance is an explanation of last resort, merely empirical and ultimately irrational and unphilosophical. By Ficino's time, however, the identical principle of explanation had been hallowed by centuries of authoritative use. Before looking closer at this principle, we need more time with Ficino as he evaluates images carved on stones.[13]

3 AMULETS AND TALISMANS

Such images are everywhere in *De vita 3*, but Ficino's thinking about them is hard to pin down. We can start by distinguishing *amulets* as stones or other items tied or hung on the body, and not bearing any pictures, signs, or words, from *talismans* as the same items used in the same way but decorated with artificial marks. Assuming such a distinction and describing the sunstone, Sun's eye, and carbuncle, Ficino explains that

> if you acquire the stones that we have just described as belonging to Phoebus, there will be no need to impress images on them. Simply set the stones in gold and hang them about your neck on threads of yellow silk when the Sun is in Aries or Leo and ascending.

Solar stones used in this way will be amulets, not talismans, but both are solid and both are worn, features that make both problematic.[14]

Drugs made of pulverized substances work better than solid stones, with or without images. And if the occult, non-elementary power of a stone has a medical use, Ficino would rather have it consumed or applied externally than worn as a receptacle of power from the heavens. He puts most medicines at the second lowest or organic level of his scale, probably because the pharmacy known to him is mainly biological. Talismans, whose matter is hard and less alive, belong at the bottom, along with stone amulets. If talismans work at all, it is not because figures are imprinted on their solid matter but because a certain kind of matter bears the figures. The pounding and heating required to carve an image may awaken a dormant quality of the stone and make it active.[15]

Efficacious or not, talismans are risky: some who have made or tried them have been deceived and possessed by demons. Ficino makes no use

of them, and he advises others to avoid them as well. Throughout *De vita 3*, he claims simply to be describing talismans, not approving them. But those used as love philtres or for aggressive magic are so dangerous that he will not even describe them.[16]

Citing the *Mirror of Astronomy* attributed (correctly, no doubt) to Albertus Magnus, Ficino notes that this work approves talismans bearing "figures and letters and sayings" as long as the power they attract is celestial and not demonic. But in the *Summa contra gentiles* of Thomas Aquinas he finds two additional constraints on the use of figured stones: first, the figures must not include characters or letters; second, they must not produce non-natural effects. "If they cause in us anything wondrous beyond the ordinary effects of nature," says Ficino, Thomas forbids them. This is clear in the *Contra gentiles* but even clearer "in his little book *On the Occult Works of Nature*, where he seems also to give little credit to these talismans, however they are made, and to the extent that he requires it, I shall give them no credit at all."[17]

Figure 30. Bloodstone Talisman, Christ Heals a Woman, Byzantine, Sixth–Seventh Centuries CE.
(Art Resource, from New York, Metropolitan Museum of Art, 17.190.491)

The qualifier in this last sentence is crucial in Ficino's reasoning about talismans. To understand it, we can turn to the works of Aquinas. *De vita 3* cites three of them: the *Summa contra gentiles*, the letter *On the Occult Works of Nature*, and the treatise *On Fate*: the last is probably not genuine, but Ficino treats it as such. And his handling of all these works remains faithful to the larger context of Thomist thought.

In the *Summa theologiae*, Aquinas cites Augustine's hard line on amulets and talismans: an object hung around the neck, even without artificial marks on it, may constitute a tacit, unintended pact with a demon, even though consuming the same object after crushing it is an innocent medical treatment. Aquinas is more flexible, however. He agrees that images and figures on talismans may express tacit pacts, but he does not forbid simple amulets. His strongest objections are to talismans bearing words, letters, or characters, artificial signs plainly meant to send a message from the mind of the talisman's maker or user to another mind – perhaps a demon's. These signs, insofar as they are artificial, have no natural power, no active or passive qualities of elementary bodies nor any natural quality coming from the heavens. Hence, the matter of an inscribed object is no different in natural power from the matter of any other item of the same species. Since the special power of such a talisman is to signify by the signs that it bears, which are not its material content, and since the signs represent the immaterial contents of a mind, the term 'noetic' from the Neoplatonists will serve to distinguish the talisman's power from a physical power that carries no message.[18]

The great *Summa* condemns talismans while permitting curative amulets. But the dubious treatise *On Fate* notes that since "constellations give the order of being and enduring to artificial as well as natural things, images are made beneath particular constellations." This relation between images and stars seems to be non-noetic, but that contradicts the *Summa theologiae*, where artificial forms "receive no virtue impressed by heavenly bodies insofar as they are artificial, but only because of their natural matter." When Ficino denies this and insists that certain artificial images get natural powers from the heavens, he is not simply exploiting a conflict between *De Fato* and the great *Summa*.[19]

He finds stronger support in the work of Aquinas best known to him, the *Summa contra gentiles*, in the chapter that explains "where the works of magicians get their power." In that place, Thomas argues that

> Since figures in artificial objects are like specific forms, someone can say that nothing prevents some power of heavenly influence from

> following the arrangement of the figure that gives a talisman its species, not as it is a figure, but as it causes the species of the artificial product that gets power from the stars. Of the letters used to write something on the talisman, however, and of other characters, nothing can be said except that they are signs and hence are ordered only to some mind.[20]

These are not the clearest lines in the *Contra gentiles*, but the distinction between conceivably legitimate 'figures' and clearly illicit letters and characters gives Ficino an opening, allowing him to assume that the Angelic Doctor accepts not just amulets but also figured talismans as both lawful and efficacious. Ficino does not condone the view of the *Mirror of Astronomy* that "letters and sayings impressed on images" are allowed if they are not demonic. He cannot agree because Thomas classifies those marks as signs that can only be noetic. But figures without writing that picture natural objects need not be signs of anything mental or noetic. *On Minerals*, a genuine work by Albertus, lists such figures as representing planets, luminaries, and constellations.[21]

Although some authorities distrust talismans, others accept them. They are at the bottom of Ficino's hierarchy, but even their small capacity receives some heavenly influence. The figures on them inherit the defects of the matter that bears them, but they also share the power of all matter to accept gifts from above – though this attributes nothing to the figure qua figure. Celestial harmonies "not only have great power over the labors of farmers and the artificial concoctions of plants and spices made by physicians," Ficino explains, "they also bestow wondrous virtue on the talismans that astrologers make from metals and stones." He has it on good authority that a Jovial talisman has cured a friend of a thunder phobia. Greek, Muslim, and biblical testimony weighs heavily in favor of talismans: Hermes Trismegistus, Porphyry, Iamblichus, Proclus, Synesius, Ptolemy, Haly, Serapion, even the story of the Hebrews and the golden calf confirm their efficacy. And yet, he tells us,

> on good grounds many question whether talismans of this kind have any celestial power. I too am often in doubt, and I would deny that they possess it except that all antiquity and every astrologer believe they have amazing force. To be sure, I would not deny it absolutely, for I suppose … they do have some power at least to improve health, particularly by reason of the material selected, though I think that drugs and salves prepared with the help of the stars have much greater power.

The key phrase is "by reason of the material selected."[22]

Ficino knows an antidote for poison that uses a bloodstone ring carved with an image of the constellation Serpentarius, but he attributes its effects "not so much to the figure as to the matter." This and similar statements are imprecise, yet they rule vaguely against the efficacy of figures on talismans. When Ficino explains that stellar rays can penetrate a gem while it is being carved with a figure, or when he reports that celestial virtue can impress itself as well on talismans as on other objects, no power is conceded to figures as such since all these claims either are or seem to be restricted to the matter of the talismans. If the matter is chosen for congruity with some celestial object, the choice is of nothing physical or metaphysical that will distinguish talismans from amulets.[23]

4 FORM AND FIGURE

What muddles Ficino's preference for matter over figure is the following statement:

> An image will work better if the elementary power in its matter is well suited to the naturally incorporated power of its species, and if in addition this power is well suited to another specific power to be gained in a heavenly manner through a figure.

Thomist doctrine accounts for figures that have such a role in attracting celestial influence to the matter of talismans. To begin, Thomas teaches that

> corporeal forms are caused … as if the matter were brought from potency to act by some composite agent.… But since the composite agent, which is a body, is moved by a created spiritual substance, … it follows further that even corporeal forms are derived from spiritual substances, … and the species of the angelic intellect are traced back a step further to God, as to the first cause.

Separated substances like angels and celestial intelligences are creatures of God that move corporeal substances, including the heavenly bodies, whose dispositive effects are always required for the emergence of substantial forms in earthly objects from the potency of some quantity of matter. "It belongs to God alone," according to the *Summa theologiae*, "to produce form in matter without help from a preceding material form." The same passage locates heavenly bodies in the causal chain that leads to the 'educing' of substantial forms in earthly matter: "the motion of the heavens is the cause of natural changes, but not of changes that happen only preternaturally and by divine power alone." Except when God

intervenes, in other words, the heavens initiate the ordinary sequence of events that puts substantial forms into earthly things. In some cases – the generation of imperfect animals, for example – "the power of heavenly bodies" is a sufficient cause (after God's creative act) of the informing of a new substance, though "the power of a heavenly body only cooperates in the generation of … perfect animals … such as humans."[24]

A passage of Thomas's letter *On the Occult Works of Nature*, which reflects an argument of the great *Summa*, explains how heavenly bodies act as instruments of the separated substances – meaning spirits that animate the stellar and planetary spheres – in the "impressing" of substantial form on matter:

> The Platonists … attributed the principle of substantial forms to separated substances, … [and] such forms proceed from separated substances as their first principles, which through the mediating power and motion of the heavenly bodies impress forms … on bodily matter. And since we have shown that the actions and powers of natural bodies are caused from specific forms, it follows that they may be traced further, as for example to higher principles, to heavenly bodies or to powers of heavenly bodies and further still to separated substances.

When a physician combines simple items under the influence of a star to make a new compound, the forms and qualities of the compound are introduced celestially. But "in the moment when it is engraved," says Ficino, "a stone seems not to receive a new quality but a figure."[25]

However, Aquinas suggests that figures are *like* substantial forms –"quasi-substantial," as Ficino puts it. Ficino summarizes the relevant but difficult passage of the *Contra gentiles*:

> A talisman gains celestial power through its figure not so much because such a figure is in this matter as because such a composite object has now been situated in some particular species of the artificial so that it conforms to the heavens. Thomas says this in book three of the *Contra gentiles*, where he ridicules characters and letters added to figures, but figures not so much unless in place of certain signs they are directed to demons.[26]

Along with light, color, and number, figure is not matter – in Ficino's view – and hence has little effect on bodies made of matter. But just because it is immaterial and like a substantial form, he argues, figure is of great effect for things celestial. "So when the astrologers say that figures … can do much to prepare our materials for celestial influences, you should not lightly … deny such statements." The role of figures is

dispositive rather than causal, however: astral and planetary influences flow from the heavens, and figure disposes matter to receive them. The matter already has this disposition in potency. Then the act of carving at an astrologically propitious moment

> awakens the power inchoate in the matter, and as it converts the matter to a figure similar to a certain celestial figure of its own, the carving thereby thoroughly exposes the matter to its own idea, and heaven perfects the matter thus exposed to that power.

The intrinsic power of amber or of jasper to attract chaff needs to be awakened by rubbing and heating. Likewise, the potency of a bezoar (a bolus of undigested material or an internal growth from an animal) against a scorpion's bite is innate in the stone but must be switched on by acquiring the figure of the constellation Scorpio. The same procedure works with sapphire, topaz, and other gems.[27]

Ficino's posture of describing rather than endorsing talismans makes it difficult to extract his views from *De vita 3*, and he may have had no settled position. His diffidence shows up in the qualifiers that he uses at delicate moments. He *suspects* that images are worthless. He knows that the *safer* course is to depend on medicines rather than figures. He finds it *more likely*

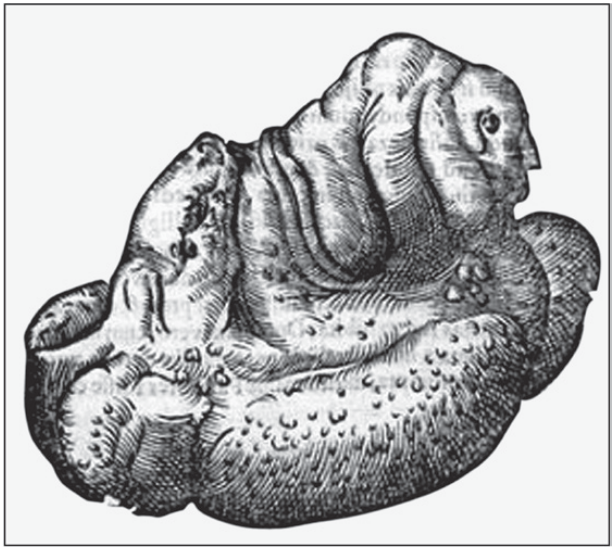


Figure 31. A Toadstone Bezoar by Aldrovandi.
(Aldrovandi [1644], p. 810)

that talismans take their power from the natural qualities of matter than that they are energized by figures, so that pounding a stone or heating it will be a *surer* stimulus to the heavens than any drawing of figures. If we take the sum of his doubts and hesitations at face value, we are still left with an account of talismans carefully supported by physics and metaphysics.[28]

5 OCCULT QUALITIES AND SUBSTANTIAL FORMS

A prominent part of this support was the medieval doctrine of occult qualities. Though the Latin *occultus* generally means 'hidden,' 'occult' in modern English is often 'non-natural,''unexplainable,' or 'mysterious.' Ficino and his contemporaries understood the Latin word in the usual way. To show that astrological medicine is not star-worship, for example, Ficino points out that 'influence' (*influxus*) comes from the heavens naturally and spontaneously, not intentionally by any noetic agency of the heavens. Influence flows from the stars and planets just as automatically as light streams from the Sun. But influence – which cannot be seen or sensed in any way – is occult, while light is manifest. The antithesis of *manifest* against *occult* is not the same as *natural* against *noetic*. When Ficino says that a wise man's duty is to understand occult and wondrous forces, he appeals to nothing non-natural or supernatural. On the contrary: to attract celestial power, "we strive to make ourselves fit for that manifold, hidden (*occultum*) influence with the same careful methods used every day to fit ourselves – in good health – to receive the Sun's manifest heat and light." The magus is a natural philosopher: instructed by philosophy and medical science, Ficino wants to see occult qualities as instruments of natural magic.[29]

Although Galen gave the doctrine of occult qualities an authoritative start, it was not his calling to explore the metaphysics of the undescribable properties (*arrhêta*) of drugs that resist analysis because they resist description. As for Aristotle, the Philosopher never mentions 'substantial form' (*eidos ousiôdes*), though the concept named by that phrase became the key to analyzing occult qualities. It was Aristotle, however, who made the paired terms 'form' (*eidos, morphê, schêma*) and 'matter' (*hulê*) central themes of Western philosophy. Teaching that a perceptible, earthly substance – a concrete individual like a human, a horse or a house – is a composite (*sunolon*) of matter and form, he asks which of three items involved in the hylemorphic union – form, matter, or the composite – has primacy as substance. Focusing on matter and form, he argues that

"the substance compounded of both … may be dismissed, for it is posterior and its nature is obvious. And matter is too, in a sense that is manifest. But we must inquire into the third kind of substance; for this is the most perplexing." The third, intractable candidate, which is form, seems closest to substance as such: the soul of a living body, for example, is both the form of that body and a substance.[30]

Schooled by Aristotle, later philosophers used the expression 'substantial form' (*eidos ousiôdes*) to discuss the metaphysics of hylemorphism. The phrase occurs frequently in the Greek commentators on Aristotle, though not in the Corpus itself. Plotinus uses it to debate the matter/form problem, and for Proclus a "magical sign" is an *ousiôdê charactêra*: the word *ousia* ('substance') itself acquired magical connotations in late antiquity. By Avicenna's time, philosophers had devised the hylemorphic apparatus that is missing from Galen's account of undescribable properties, and part of the package was magic.[31]

In the *Canon* – an encyclopedia of medicine read by every physician and criticized by some – Avicenna explains that certain substances act on the body not because of their matter or elementary qualities but through *specific* form, "that by which a thing is what it is," the form of a *species* or kind. This form comes to be after but not because the elements combine in a certain way to make up a substance that is an individual of some species. "When simple elements mix with one another and an individual thing is generated from them, preparation has been made for the reception of a species and a form added to what the simple elements possess." Imperceptible features of imperceptible forms explain why a magnet attracts iron, why a peony root cures epilepsy, why opium makes us drowsy, and other such phenomena that are observable but are not effects of perceptible, elementary qualities – hot, cold, wet, dry. In pharmacy and medicine, says Avicenna, the powers of composite drugs that come from specific forms are especially strong.[32]

Likewise powerful are the philosophical and theological uses of the concept of *substantial* form, especially in psychology. Having worked out his concept of substance, Aristotle had concluded that "the soul must be a substance in the sense of the form of a natural body having life potentially within it." Thomas says that "the intellective soul is joined to the body as a substantial form."[33]

Thomas also allows that *specific* and *substantial* forms are the same, using the terms interchangeably in his *Letter on the Occult Works of Nature*. He views material objects both metaphysically as composites (*composita*) of matter and form and physically as compounds (*mixta*) of the four

elements. The same form called 'substantial' because it gives substantial being (*esse*) to a composite is also 'specific' because it makes the composite a member of its species. Avicenna has the latter point in mind when he writes that specific form is "that by which a thing is what it is," though other medieval physicians were not convinced.[34]

Thomas sees the properties of composites as more elusive than qualities of the elements in compounds. Discussing their components, he sometimes mentions the same minerals and plants (jasper, sapphire, magnet, rhubarb) that appear in the medical literature in accounts of specific form and the whole substance. The being of a composite called 'substantial form' is its being as such (*esse simpliciter*) as opposed to its being thus and so (*esse tale*). Jasper's substantial form is what makes that gem the self-subsisting item *that it is*, whereas an accidental form – a manifest quality like a shade of green – only makes jasper *such as it is*, having that shade of green, a shade it could lack yet still be jasper. In the relation of accidental composition, a dependent accidental form, like green, joins with a subsistent object, a gem, but in substantial composition, form and matter, neither subsisting by itself, join to make the composite that stands on its own as a substance and is also a subject for accidents like green.[35]

Figure 32. Green Jasper Amulet.
(Campbell Bonner Magical Gems Database, CBd-86)

A fundamental distinction in scholastic philosophy is between accidental forms, including qualities of the four elements that constitute every bodily substance, and the form of the substance itself. Supposing that each element can change into a different one, philosophers ask about the substantial forms of the new and old elements. Though Aristotle claims that the 'generator' of the new form is the new element itself, some medieval interpreters balked at a material item producing its own substantial form. They also ruled out accidental forms as causes of substantial form. But some allowed accidents of earthly bodies, in conjunction with the active and motive power of celestial bodies, a dispositive role in preparing matter for the 'educing' of substantial form. Several texts of Aristotle support this option, which was not universally appealing. Some called it "the last refuge of scoundrels in philosophy, as God is their refuge in theology."[36]

The disputed Aristotelian solution is a standard Thomist position and is compatible with the theory of 'educing forms' (*eductio formarum*): the action of celestial or other agents on a physical substance puts its 'signate' matter –'matter signed with quantity,' or a batch of matter, as we might say – in just the right state of potency for receiving a new substantial form of some species. A form is educed from the potency of matter as the heavens impress that same form on the matter. Special properties like the curative powers of amulets are features of the educed substantial forms, whose origins are in the stars and planets and beyond. Though the accidental forms of such objects (like the green of jasper) are perceptible, these substantial forms are not. Imperceptibility makes such forms ideal carriers of the undescribable (*arrhêtos*) or occult (*occultus*) properties that Galen, Avicenna, and other physicians ascribe to the whole substance. The properties that Galen calls *arrhêtos*– literally, 'unsayable'– are unseeable or *occultus* for medieval philosophers and physicians.[37]

The doctrine of forms that Avicenna records in the *Canon*, an authoritative textbook of medicine, was more persuasive for physicians than for philosophers. When one compound changes into another, he writes, the specific forms of its elements are preserved while their qualities suffer a remission that gives the underlying matter the disposition needed to receive the form of the new compound. The new specific form comes from the tenth celestial Intelligence, the Giver of Forms, a spiritual being who animates a sphere surrounding the physical universe. Aquinas refutes this view in both *Summas*, and in the *Summa theologiae* he makes the heavenly bodies the main agents of educing substantial forms in bodies:

> In these lower bodies no active principles are found except the active qualities of the elements, … cold and hot and so forth, … which act as material dispositions for the substantial forms of natural bodies. But matter does not suffice for action, and so beyond these natural dispositions it is proper to posit … some active mobile principle which, by its presence and absence, causes variation in the generation and corruption of lower bodies. And the heavenly bodies are principles of this sort. Therefore, anything in these lower bodies that generates and moves matter to a species does so as an instrument of a celestial body.

Thomas takes the same position in his *Letter on the Occult Works of Nature*. This unquestionably genuine work describes occult qualities as effects of specific or substantial forms, associates them with stones used in medicine and shows how they may weaken or strengthen in various individuals of the same species "according to the varying disposition of their matter and the varying position of the heavenly bodies."[38]

Albertus says something similar: "in comparison to the matter that it shapes, form may be either more … or less potent, … either because of disorder in the matter or because of very strong heavenly powers." Albertus also teaches that the substantial forms of stones are "imparted by the heavens." He carefully distinguishes the substantial form of a stone from that of an animal or plant, treating stones as altogether lifeless and without soul. Nonetheless, he confirms their amazing properties, learned from experience and tradition. He ends his second book *On Minerals* with a tractate on amulets "whose effects – as observed in natural science and tested by great experts – … are produced by the powers of their specific forms." The previous section is a catalog of stellar and planetary figures for use on talismans.[39]

In the framework of hylemorphism, figures on talismans are artificial forms and accidental rather than substantial. Whether carved in terrestrial bodies, like gems, or made of celestial bodies, like stars in constellations, such figures are accessible to human perception, unlike substantial forms. But if the object that bears a figure is in some way artificial, like a natural gem made into a talisman by carving, the figure is also something like a substantial form because the figure – or some other artificial form – contributes to constituting the artificial object as artificial. Along these lines, Thomas suggests that the metal in a bronze statue is like matter in the hylemorphic union and that the statue's figure is "the form of the species – in other words, what gives the species … not actually but analogically."[40]

Strictly speaking, a figure cannot be a specific form because such a form gives being while a figure only gives quantitative determination.

This distinction is important for Thomas. In the *Summa contra gentiles*, he depends on it – and on an exclusion principle for substantial forms – when he attacks the god-making in the *Asclepius*:

> If it is said that this statue gets any principle of life from the power of the celestial bodies, this is impossible, for in all living things the principle of life is a substantial form. It is impossible for anything to receive a substantial form anew unless it loses the form it had previously.... But in making a statue no substantial form is given up; a transmutation occurs only according to figure, which is an accident, for the form of bronze or something of this sort remains.

Yet because figure, of all accidents, is the best indicator of the species of an object, Thomas holds that it *resembles* specific form. When Ficino saw in the *Contra gentiles* that "figures in artificial objects are *like* specific forms," he encountered an idea ready-made for the Christian magus because it had been well established in Christian philosophy.[41]

6 HEALING WITH STONES AND STARS

That idea was also well known to physicians of Ficino's era and a little earlier. Commenting on Galen, for example, Pietro Torrigiano de' Torrigiani (Turisanus) argues that

> in artificial things a figure is a substantial form, by which artificial things are what they are, for a sword, a saw and similar things are of the sort they are solely by reason of figure.... In all natural things, however, ... figure is not a substantial form but its consequence, and to the extent that such things differ in species and form, their figures differ.

The figure of immediate concern to Turisanus is the formation or conformation of a bodily part, as in the setting of a broken limb, but he uses philosophical terminology to describe the orthopedics. Among the physicians associated with Taddeo Alderotti as pupils or colleagues, Turisanus excels in his application of philosophy to medical questions. For him and his associates, the philosophy of choice is the Aristotelian physics and metaphysics of the schools; among the departments of scholastic natural philosophy, astrology is prominent in their medical writings, not as a separate subject but as an article of the physician's mental furniture. The attitude of these physicians to philosophy is instrumentalist, but they are well informed, careful, and critical. Turisanus is ready to oppose Averroes in order to follow Aquinas, for example, when he responds to a vexed question about the substantial form of an element: what happens

to it when the element's 'complexion' (*complexio*), its blend of qualities, changes? If water (cold and wet) turns into earth (cold and dry) by trading one quality (wet) for another (dry), does any form persist?[42]

Practical medical problems determine which philosophical topics get attention. Obstetrics leads to embryology and then to the soul and psychology. Regimen and pharmacy raise questions about matter-theory – elements, qualities, mixtures, compounds – and the metaphysical background, including substantial and specific form. Like his colleagues and pupils, Alderotti discusses form under the rubric of complexion. As the basic qualitative constitution of a material thing, complexion is like form in making one item distinct from others. But time, illness, therapy, and other processes alter a thing's complexion even as it survives such changes, so the complexion is mutable, unlike a specific form. Alderotti agrees: he follows Avicenna in keeping complexion distinct from specific form, though the form needs a complexion to act dispositively in matter for the form's reception. Like Peter of Abano but unlike most other physicians, he does not deny that the specific form given by the heavens is also the substantial form.[43] The standard position was Ugo Benzi's, commenting on Avicenna:

> It is not true that in the terminology of physicians 'specific form' or 'whole substance' is nothing but the substantial form through which a thing is what it is.... Although for philosophers the term 'specific form' seems to mean a form giving specific *esse*, ... physicians ... do not take it in this way but use it ... for everything that follows from complexion, whether a quality or a substantial form.

Ugo attributes the confusion about form to misreading Avicenna, but his contemporary, Jacopo da Forlì– who writes at length on the topic – confronts Avicenna directly, insisting that specific and substantial form are distinct. He also blames the misunderstanding on physicians and philosophers who treat 'specific form,' 'whole substance,' and 'occult property' as synonyms: they equivocate on 'specific form' as sometimes a substantial form that gives *esse*, sometimes an occult property associated with a species, sometimes any operative occult principle, and sometimes any agent at all – occult or manifest – that produces effects in an unaccountable way. Jacopo complains that Thomas aggravates the confusion, and he rejects the account of forms in the letter *On the Occult Works of Nature*. But he agrees with Thomas that "beyond the manifest qualities in blended things, occult qualities are also found ... that follow mainly from heavenly influences."[44]

In the later Middle Ages, astrological remedies were normal practice for educated physicians who studied Hippocrates, Galen, Avicenna, Averroes, and other learned healers, reading them in a philosophical framework created by Aristotle and extended by Albertus, Aquinas, and other scholastics. One finds the scholastic notion of occult quality, for example, not only in the imaginative Arnaldus of Villanova but also in the more sedate Bernard of Gordon – and not only in a safe context like prognostics but also in a riskier genre, the treatises on 'sigils' (*sigilla*) or talismans.[45]

Like Bernard, Arnaldus writes about regimen with an eye on growth and aging, ordinary medical topics, but some prescriptions in his manual *On Preserving Youth* violate Augustine's prohibition of amulets: "wear on the body some calamite-stone with saffron and … keep coral hung above the opening of the stomach." More daring, because they carry messages, are the images and incantations in the (possibly spurious) *Sigils of Master Arnaldus*. And even the *Treatise on Making Sigils and Images* attributed to Bernard discusses zodiacal figures and astrological times for therapy. Inevitably, the time-honored study of regimen led from advice about food, drink, weather, and the local environment to speculation on the cosmic environment, where astrology and astrological technology come into play.

Bernard's *Treatise on Preserving Human Life*, with sections on eating, drinking, sleeping, copulating, exercising, and bathing, resembles the book that Arnaldus wrote *On Preserving Youth* which, in turn, resembles the work by Ficino that Arnaldus influenced, his *Three Books on Life*, whose first two books are *On Healthy Living* and *On Living Long*. Ficino writes in a medical tradition that requires the physician to understand how the macrocosm affects the human microcosm and directs him to consult philosophers for that understanding. By the time Ficino wrote *On Life*, the ground was well prepared for a philosophically sensitive treatment of astrological medicine written by a physician who was also a philosopher and a priest.[46]

7 ARISTOTELIANS AND PLATONISTS

Ficino's thinking about forms, figures, and magical objects is grounded in traditional medicine, matter-theory, and metaphysics: occult qualities explain the strange features and striking effects of magical objects; the doctrine of forms gives an account of occult qualities; substantial forms come from the heavens; occult effects of substantial forms are intermittent

or unequal because qualities flowing from celestial substances undergo remission and intension; heavenly causes dispose earthly matter for the educing of substantial form in the whole substance; and the hylemorphic analysis of figures suggests that they are quasi-substantial forms.

This is not exactly what Galen, Avicenna, Thomas, or Albert taught. In order to give figure a natural, non-noetic relationship with matter, Ficino relies on the difficult notion that figures are accidents that act *like* substances, thereby permitting the relationship between figures and the heavens to be natural – not demonic – inasmuch as figures are *like* the substantial forms of ordinary bodily things. The theory is subtle and also evasive and more learned than rigorous, but it is rooted in the best philosophy and science available.

Ficino's theory diverges from the teachings of his greatest medical and scholastic predecessors in three notable ways. He claims that stones are somehow alive, he stresses the magical medium of spirit to explain their effects, and he emphasizes imitation and resemblance when he describes the activity of images carved on stones. Two of these distinctive features of Ficino's theory, vitalism and similitude, are characteristically Platonic, and although the core of the third –*spiritus* or *pneuma*– is Stoic, the Neoplatonists also rely on it.[47]

De vita 3 is full of magical objects that Ficino recommends because they receive or awaken celestial powers. Their philosophical ancestors are found in the Neoplatonic 'chains' (*seirai*) and 'orders' (*taxeis*) that bind one domain of the All to another. Writing in his magic book about "orders of things that hang from the stars," Ficino borrows from Proclus to describe a solar chain whose terrestrial links are the crocodile, hawk, lion, cock, swan, crow, palm, laurel, ash, lotus, peony, sunstone, Sun's eye, and carbuncle. The Neoplatonists call such things 'tokens' (*sunthêmata*) and 'signs' (*sumbola*). Their resemblance to celestials and supercelestials gives them the 'fitness' (*epitêdeiotês*) that links them automatically to higher powers. Such things are used in the rite of theurgy called 'completion' or 'consecration' (*telestikê*) that invites higher powers to animate statues composed of or enhanced by these dispositive tokens and signs. The Hermetic *Asclepius* briefly describes the rite, which Ficino anxiously examines at the end of *De vita 3*.[48]

His account is cautious, leaving it undecided whether magic addresses only "cosmic powers," merely flirting with idolatry, or else approaches higher gods and sins against religion. Although Aquinas and Augustine both condemn the *Asclepius*, Ficino tries to redeem it not only with the restriction to cosmic powers but also by bringing the Neoplatonic

magic of stones, plants, and animals within the limits of *natural* philosophy. In this framework, the natural contrasts with the *noetic*, not with anything *occult*: many natural objects have both manifest and occult qualities; opium is both bitter and dormitive; a magnet is attractive but also heavy; the mysteriously potent ship-holder is a fish that swims like other fish. All these qualities, both manifest and occult, descend from the heavens: tapping the stars as reservoirs of power is just an application of natural philosophy, whereas invoking them as agents with mind and will violates the first commandment.[49]

Accordingly, Aquinas considers talismans sinful if their figures include signs that only minds can interpret, not just pictures embodying similitudes between unthinking objects. This prohibition of signs – implying that merely pictorial or iconic figures do not work noetically as signs – is not disingenuous for Aquinas because the literature of late Neoplatonism was not open to him as it was to Ficino. Even the *Elements of Theology* by Proclus, available to Thomas in William of Moerbeke's translation, is unhelpful on the topics in question unless it is read with Proclus *On Sacrifice* or Iamblichus *On the Mysteries* or other Neoplatonic texts that Ficino was the first to see in the Latin West.[50]

Having translated Iamblichus, having cited *On the Mysteries* in *De vita 3*, Ficino must have understood the crucial passage that blurs the distinction between the noetic and the natural as a license for talismans or amulets: "It's not the act of thinking that actually unites theurgists to the gods," says Iamblichus,

> … but the pious performance of acts surpassing description and all understanding, along with the power of unspoken symbols.… These signs themselves are self-efficacious, and the undescribable power of the gods indicated by them recognizes of itself its own copies without any stimulus from our thinking.

A talisman or amulet needs no noetic content in order to set the demons on its wearer. The link is in the physics and metaphysics of the cosmos that ensouls both the stone and the demon. Having learned this lesson from Porphyry – whom Iamblichus rebuts in his polemic – Augustine takes an aggressive stance against wearing herbs and stones even if they lack figures of any kind. The Galenic physician – a Christian like Augustine – who writes about kidney diseases also has religious objections to amulets, of which Galen is wary just on scientific grounds. Augustine and the unnamed Christian physician knew – as Ficino also knew but Aquinas could not have known – that the religion behind the Neoplatonic view

Figure 33. Hezekiah Orders the Idols Destroyed: 2 Kings 18:4. (Merian [1625], II, 127)

of talismans was not so much alien to Christianity as estranged from it like an angry cousin.[51]

Though Aquinas uses the relevant texts of Augustine in works cited by *De vita 3,* Ficino does not confront the Augustinian position – which is like avoiding Lamarck's ideas in a history of evolution. Since *De vita 3* grows out of a commentary on Plotinus, since it is so pervaded by Neoplatonism, this is a telling omission that must color our understanding of the distinctly Neoplatonic side of Ficino's natural magic.

The ambiguous concluding chapter of *De vita 3* shows how difficult Ficino's situation was. Frances Yates, who reads this work as "a commentary only secondarily on Plotinus and primarily on … the passage in the *Asclepius* in which … [Hermes] described the magical Egyptian worship," interprets that chapter as evidence that Plotinus had convinced Ficino to abandon Thomas's condemnation of Hermetic demonolatry. "First, on the basis of St. Thomas's opinion," writes Ficino,

> granting that they made the statues speak, I believe it was demons and not the simple influence of the stars that formed the words. Next, if perhaps it did happen that they entered statues of this sort, I think they were not bound there by celestial influence alone but rather that they came on their own to gratify and then to deceive their worshippers. For sometimes a higher nature may indeed be reconciled with a lower, but it cannot be constrained.

Far from rejecting the Thomist doctrine, these remarks simply paraphrase Thomas's use of Augustine in both *Summas*.[52]

Yet it is "St. Thomas's opinion" – not Augustine's – that Ficino introduces as he tries to mitigate the demon worship in the *Asclepius* because it involves only lower spirits, not real gods. Forgiving Hermes for his magical priestcraft, he takes the doctrine of seminal reasons from Plotinus to show that if the magus only manipulates the *material* forms that derive from such reasons, then his magic will invoke higher, *immaterial* beings only indirectly. Seminal reasons, taught by the Stoics to Plotinus and Augustine, explain the origin of forms for Bonaventura and other medieval thinkers. But they are a mismatch for the Thomist hylemorphism of *De vita 3* because their formative character is excluded by the absence of any form whatever from Thomas's prime matter. Thomas rejects even the related but weaker notion of 'inception' (*inchoatio*) of form proposed by Albertus, to which Ficino also alludes in *De vita 3*.[53]

Ficino takes philosophical support for his theory of magic where he can find it. His inconsistency – assuming that he noticed it – must have worried him less than the need to rest his case on the best philosophical authorities. When he ends the last chapter of *De vita 3* with a predictable promise of pure Gospel piety as against the "impure superstition" of pagans, his sincere pledge of orthodoxy is joined to the magical theory that precedes it as loosely as the elements of the theory are related to one another.

CHAPTER SEVEN

DATA: A TALE OF TWO FISH

> I might make you a list of many such things
> that are known only by experience.[1]

1 GASSENDI'S FLEA

Pierre Gassendi was eminent in the generation of European thinkers who decisively discredited what their predecessors had accepted as "the occult philosophy." When Henry Cornelius Agrippa used those words to title his famous book of 1510, he advertised what he inherited from Marsilio Ficino: a theory of natural magic framed by a comprehensive and systematic natural philosophy. A century later, Gassendi and his colleagues shook the edifice of natural magic by removing its philosophical foundations, replacing the scholastic apparatus of matter and form, substance and accident, with corpuscular and mechanical structures.[2]

The new science had empirical support from actual and notional experience – Descartes meditating on bouncing tennis balls or Pascal's brother-in-law hauling a tube of mercury up the Puy-de-Dôme. But the discarded theory of natural magic had also been confirmed for centuries by observational claims about material objects and physical events – by things strange enough to count as magical, with properties and effects that strained the prevailing matter-theory.[3]

One such property was action at a distance, apparent when a magnet attracts iron, when chaff flies toward amber, and when the tide rises in rhythm with the Moon. The same property came up in reports that the basilisk's gaze stuns its prey, that witches should be feared for the evil eye, and that the mighty lion fears a puny rooster. Many such things, real and unreal, filled an immense inventory of magical objects. Since antiquity those items had provoked the questions that theories of natural magic

tried to answer. Countless discussions of magic from ancient, medieval, and early modern times refer repeatedly to such things as empirical referents of theories devised by such authorities as Plotinus and Proclus, Aquinas and Ficino.[4]

By Gassendi's time the catalog of magical objects had long been part of the common stock of European ideas. In a book on solar optics, the innovating Gassendi exploits this convention to score a point on his recalcitrant scholastic adversaries, whom he criticizes for pretending to "see things from the inside, as if they knew the true and proximate causes of natural effects. For me, clearly, there is nothing that is not a magnet or a remora, so the least little animal or plant … is a thunderclap." Declaring that human knowledge stops "at the bark of things," Gassendi wants to replace the inward abstractions of scholastic natural philosophy with an empirical natural history and to shut down the old metaphysical magic show, where the magnet and the remora were props at center stage. "Aristotle! You fine Peripatetic!" he roars.

> You give me matter, form and privation as principles. But I ask you to show me the *essence* of just one object, even the tiniest in nature.… I don't challenge you with anything as grand as the remora.… I'll take the little beast that often infests you, the flea.…You say that matter and form are in the flea, …but my question was what this matter is, … by what power the flea stings so sharply.…What a splendid philosophy![5]

Some of Gassendi's questions for the verminous Peripatetic have obvious answers. We all know what a flea is. But what is a remora? Why is it "grand"? And what does it have to do with metaphysics and magic?

2 NAUKRATÊS, NARKÊ, AND THE FISH THEY SWAM WITH

Superbly educated in the classics, Gassendi knew that the answers started in antiquity. A genre of books on 'physical powers' and 'sympathies and antipathies' had begun to appear in the second century BCE, presenting alphabetical lists of objects whose effects, genuine or fictional, were puzzles. One list under the letter *N* includes a fish called *naukratês* or 'shipmaster' and a ray called *narkê* or 'stunner.' Another name for the shipmaster is *echeneis*, from 'hold' (*echô*) and 'ship' (*naus*). Although a fish with that name might simply *hold on* to a ship, the word came to designate a fish that *holds* a ship *back* and keeps it from moving. The alphabetical accident connecting the mighty *naukratês* with the stunning *narkê* helped shape the story of magic for two millennia.[6]

Pliny the Elder, a Roman authority on science – and hence on magic – borrowed heavily from the literature on sympathies and powers to compile his encyclopedia of nature. His dramatic word-painting introduces a section on fish: huge ships tossed by angry seas set the scene for "nature's greatest achievement," which gives "enormous evidence of occult power." This wonder is "a tiny fish half-a-foot long" yet powerful enough to check the motion of a great vessel "with no effort of its own, neither by pushing against it nor by doing anything else but sticking to it." This echeneis or *mora* ('delayer') stopped Antony's flagship at Actium. In similar circumstances, divers found an echeneis stuck to the rudder of Caligula's ship. The same fish protects against miscarriage, difficult birth, and prolapsed uterus.

Ship-stopping by an otherwise nondescript *mora* is Pliny's answer to sceptics who "doubt that there is any natural power or force or effect in remedies from growing things.... Even without this example," he adds,

> the stunner (*torpedo*) would be enough by itself. Even at a great distance, or if touched with a spear or a stick, it numbs the strongest arms.... But if this example compels us to admit that there is some force that by smell alone and by a body's aura causes our limbs to hurt, what should we not expect from the potency of all remedies?[7]

Finding the torpedo (*narkê*) and the echeneis (*naukratês*) listed together alphabetically in his Greek source, Pliny pairs the two fish as striking cases of occult power, while also describing their other properties and uses. The torpedo is carnivorous, cartilaginous, and viviparous, hibernating under the seafloor and hiding in the sand to daze unwary prey. Unharmed by its own poison, the ray has a number of medical applications: it is depilatory, antaphrodisiac, a relaxant for the bowels, curative for the spleen and uterus, and good for a speedy birth when the Moon is in Libra. More than one fish is called a 'ship-holder,' including a small, inedible rockfish that not only retards premature births and checks fluxes from the gravid uterus but also delays lawsuits and acts as a love-charm.[8]

To prove that the echeneis has no feet, Pliny – in a passage where the Latin text has gone bad – cites Aristotle. Aristotle writes that the fins of the echeneis are not feet but look like them, and Pliny may have misunderstood, thinking that Aristotle saw a fish with 'feathers' or 'wings' (*pinnae*). Still following Aristotle, Pliny aggravates the confusion by describing the sea urchin or *echinus* as having "spines (*spinae*) instead of feet," leaving his readers (and editors) to keep the *pinnae* of the echeneis separate from the *spinae* of the echinus. One echeneis looks like a slug or

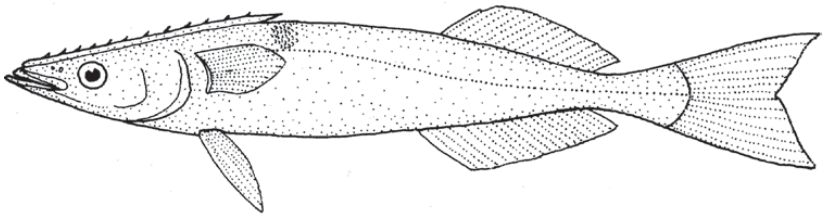


Figure 34. Remora Brachyptera.
(Ayling and Cox [1982], p. 214)

snail (*limax, concha*) and stops a ship by clinging to its steering-oar. But another is a rockfish equipped with broad, wing-like fins that slows a ship by grasping its keel. A shellfish, the *murex*, also "slows ships … and has the power … to pull out gold that has fallen into the deepest wells." What to call the storied ship-stopper: murex or echeneis? Is an echeneis with *pinnae* different from an echinus with *spinae*? Textual problems blur the identities of magical fish.[9]

Remoras belong to the family *Echeneidae* of the bony fishes. To travel and share the food of their hosts, the several species of this warm-water marine animal, varying in size from seven inches to three feet, attach themselves by a cephalic disk to larger fish or boats. In this habit they are like other animals that are not relatives. The marine lamprey, *Petromyzon marinus*, also uses its suctorial mouth to stick to fish, boats, or rocks, but in order to feed parasitically, not for transport or to eat commensally. The many hundreds of goby species are mostly coastal and live among rocks. Their pelvic fins have fused into a suctorial disk used for attachment, and other fins can work like feet, as Aristotle correctly noted. In this way, gobies resemble blennies. The pilot-fish *(Naucrates ductor)* – related to jacks, pompanos, and other *Carangidae* – is commensal like the remoras but has no way to attach to other fish; it swims along with its companions in order to share their food. Any of these animals might be confused with another. Textual accidents add four others to the list: the *echinus, limax, murex,* and *concha* mentioned by Pliny. Erudition makes a muddle of nature's bounty.[10]

The echeneis in Aristotle's *History of Animals* is surely a goby or a blenny, and Pliny copied Aristotle. He did not mean to turn Aristotle's goby-echeneis into an echinus or a murex, but vague and uncoordinated descriptions allowed his readers to merge the wing-finned rockfish of book 9 of the *Natural History* with the slug-like *mora* of book 32. Antony lost at Actium half a century before Pliny was born, and Caligula was

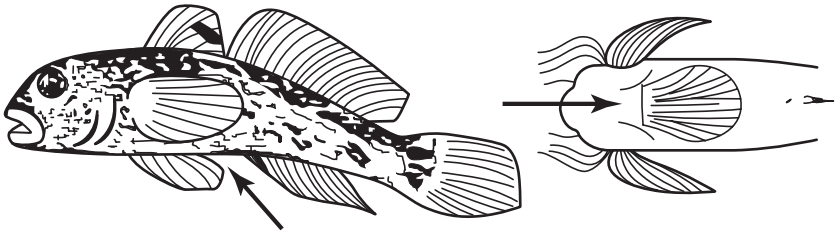


Figure 35. A Goby's Pelvic Fins.
(Marsden and Jude [1995], from Figure 2)

murdered when he was eighteen, so Pliny told the ship-holding stories of book 32 at some distance from the events. These famous reports could involve any number of fish, including the marine lamprey – the likeliest candidate for the black, biting, eel-like echeneis mentioned by Aelian around 200 CE and for the dusky, slender cubit-long fish described earlier by Oppian of Cilicia. Earlier still, Plutarch had cited the ship-stopper as supposedly a case of "antipathy," criticizing those who were loading this magical category with unexplained phenomena instead of looking for natural causes. He proposes a mechanical explanation for ship-stopping: noting that ships swollen with water and covered with algae and seaweed move slower than drier and unencumbered vessels, he suggests accumulated organic material as the cause – both of retardation and of the fish's presence, the latter signaling the former.[11]

The torpedo's powers amazed the ancients, but its identity stymied them less than identifying the shape-shifting echeneis. Almost all Greek and Latin authors who discuss the torpedo have *Torpedo torpedo* in mind, or else one of the other two species of electric ray found in the Mediterranean – though one writer, Athenaeus of Naucratis, mentions the electric catfish (*Malapterurus electricus*) of the Nile. The electric rays, whose almost forty species occur in other oceans as well, belong to the family *Torpedinidae* of the order *Raiiformes*. Like the famous electric 'eel' *(Electrophorus electricus)* of South American rivers, the torpedo generates electricity for defense, predation, and – possibly – navigation and communication with modified muscle tissue. Its potent electric organs are two large kidney-shaped structures located symmetrically on either side of the head in the animal's anterior part.[12]

Since the ancients understood nothing about electricity, accounts of the torpedo speculate about how the fish could produce its remarkable effect. The same accounts cover behavior, food value, and medical

applications: is the ray oviparous or viviparous, is it hard or easy to digest, is it aphrodisiac or antaphrodisiac? As with the echeneis, the main natural-historical authorities are Aelian, Aristotle, Oppian, Pliny, and Plutarch, who actually has less to say about the torpedo than Athenaeus, another writer of miscellanies contemporary with Aelian.[13]

Athenaeus writes with relish and in great detail about seafood in his *Sages Dining*. One of his sources is a lost commentary by Diphilus of Laodicea on *Animal Toxins*, a didactic poem on that subject composed by Nicander of Colophon, probably in the second century BCE. By observing the fish carefully, Diphilus had learned that the torpedo's power is confined to part of its body, thus locating a problem that was to exercise early modern biologists and investigating it in a serious way. Athenaeus also reports that Clearchus of Soli, who lived about a century before Nicander, wrote a long treatise *On the Stunner*, though he could not recall what Clearchus had said. Had they survived, these works by Clearchus and Diphilus might have told us how naturalists understood the torpedo at a time when the empirical instinct was still strong in ancient science. Aristotle stresses firsthand experience when he notes that the ray's stratagem of hiding in the sand to stun its prey "has been actually observed in operation." But five centuries later the credulous Aelian has only learned "from wise men" that the fish can numb a man's body. Natural history is no longer a field of inquiry for Aelian – more a literary genre meant to entertain or edify.[14]

That the torpedo can numb or stun or paralyze those who touch it was not in question for the ancients. They also agreed that those effects occur not only by direct contact but also at a distance or through intervening media. Fishermen told of being numbed by the ray through all the tools of their trade – spear, rod, club, line, and net. "Some who have experimented with it," according to Plutarch,

> report that if it is washed ashore alive and you pour water on it from above, you may feel the numbness rising to your hand … by way of the water which, so it seems, suffers a change and has already been infected. It never attacks head-on … but swims … around its prey and projects its shocks as if they were darts, thus poisoning the water first and then the animal through the water.

The poet Claudian also thinks that the torpedo acts through poison, writing that "nature armed its flank with a numbing toxin, … a dread paralyzing force." He identifies the ray's poison with cold, the manifest quality that ancient medical theory often linked with the symptom of numbness.

Pliny, specifying that the torpedo senses its own power and is immune to it, also speculates that it acts by means of a smell or vapor: here Pliny calls on that endlessly adaptable category of theoretical entities called 'spirits,' material substances so lightly embodied that they can unite causes and effects whose linkages are physically imperceptible.[15]

Why write a lyric poem, like Claudian's, about a fish? Because the torpedo's occult powers had become a common example of magical action outside specialized scientific writing. Eight centuries earlier, the torpedo's magic was already known to Plato, who alludes to it in the *Meno*. Its fame spread through scholarly treatises like Varro's study of the Latin language as well as the sensational books of the paradoxographers. The echeneis – sometimes paired with the torpedo, sometimes alone – also became an emblem of magical power. When Lucan lists ingredients for a witch's brew, he chooses the ship-stopper to cook with lynx's guts, hyena's hump, and dragon's eyes. In poets like Lucan or in medical authors like Scribonius Largus, such recipes shed little light on why their ingredients were thought to work.[16]

Had explanations never been invented, the fame of our two magical fish would not have grown as it did. It was mainly the torpedo's role in medicine that made the pair famous – directly for the ray, indirectly and by association for the echeneis. A treatise attributed to Alexander of Aphrodisias, for example, uses the torpedo and other magical objects when introducing 'unnameable properties' (*idiotêtes arrhêtoi*) as a category of explanation:

> Why does the magnet-stone attract only iron? Why does the substance called 'amber' draw up to it only chaff and dry straws, making them stick together? And why does the lion fear the cock? … No one is ignorant of the marine torpedo (*narkên*). How does it numb (*narkoî*) the body through a string? … I might make you a list of many such things that are known only by experience and are called 'unnameable properties' by physicians. The peculiar unnameable thing asserted of each of them actually suffices to explain the causes.

Why did ancient physicians make the torpedo a prominent example of a natural object with properties that defy description – occult properties? For an answer, we can turn to the matter-theory assumed by the medical literature, especially Galen's works.[17]

By Galen's time, physicians had developed a therapeutic taxonomy centered on elementary qualities assigned to substances not only qualitatively (substance *S* is hot) but also quantitatively (*S* is hot in the first

degree, second degree, and so on). When cures are based on these carefully conceived qualities, Galen can deal with them systematically – "by some rational method" – and distinguish them from other cures known only empirically or "from experience." Some clinical data – that a live torpedo cures headache, for example – are empirical and occult because the four elements and their manifest qualities cannot entirely account for them. Many drugs, foods, poisons, antidotes, and amulets work in part because of their elements and sensible qualities but also in part because of their "unnameable properties" and "according to the whole substance." If a mysterious property like the torpedo's cannot be isolated in any of its parts, Galen's theory attaches it to the object as a whole – to the whole substance.[18]

Later medical accounts of occult properties often cite Galen's experience with the torpedo and his descriptions of its properties. Although he finds it useless against hemorrhoids, he reasons that the living ray might relieve headache if, like other medications, it could 'deaden' (*narkan*) feeling. The effect of touching a live torpedo (*narkê*) is 'numbness' (also *narkê*), the condition of diminished sensation and mobility that Galen traces to cold – a manifest quality – and to compression of the nerves. But the ray's great power, known to paralyze a fisherman's hand through a spear, needs more explaining. Galen looks for it in "certain qualities and powers" that are "not directly explained." Where he cites these obscure qualities to account for the ray's effects, he associates the fish with the magnet and with poisonous animals, things that he and others see as having "unnameable properties" that act through "the whole substance." His conclusion that the ray needs an occult quality as well as the manifest quality of cold to deaden pain and stun its prey assured the torpedo's magical renown as long as Galen's authority prevailed in medicine.[19]

3 CHRISTIAN WITNESS AT SEA

Although no version of the *Physiologus* – an ancestral bestiary written originally in Greek – mentions the torpedo or the echeneis, by the end of the twelfth century both animals appeared in Latin zoological compilations, whose authors depended not only on Pliny and other pagan authorities but also on Isidore's Christian encyclopedia as well as Patristic literature on the creation story.[20]

The *Hexameron* by Ambrose of Milan treats the echinus and echeneis as different fish. Discussing the echinus, Ambrose follows Pliny's account

of the sea urchin as a kind of crab that clutches stones for stability in rough weather and warns sailors of coming storms. The prescient echinus shows God's wisdom manifest in creation, and the little fish's amazing strength demonstrates the power of divine benevolence. Scribes who copied the *Hexameron* did not always preserve the orthographic distinction between echinus and echeneis, however, no doubt confusing Ambrose's readers, who in any event saw these animals as religious icons, not natural objects. Ambrose calls both fish "small" and depicts both as battered by wind and wave, further blurring their identities.[21]

The effects of textual degradation on the same material can be seen in the sermons of Jacques de Vitry, an important homilist who lived until 1240:

> Echinus is a good fish, a sea fish, worthless and small, often a harbinger of foul or fair weather to come. When it senses a storm coming, it takes hold of a stone and uses it as an anchor so as not to be knocked about by the waves, thus steadying itself not with its own powers but with another's weight. Through this sign sailors detect the coming storm. In like manner, the saints – who are worthless to this age, abject and small in their lowliness – put no trust in their own powers but steady themselves against the storm of persecutions and temptations by taking strength from the works of Christ and from Christ himself, who is the stone of the corner. But let no one despise the counsels of our simple and lowly brethren since sailors take provision from the sign of a little fish and prepare themselves against the storm. Likewise, as the echinus also renders a huge ship motionless so that you would almost think it rooted in the sea, even though the fish itself is small in size, so the saints, little and lowly people, are so large in virtue that by preaching and showing how to behave well they often restrain the great princes of this age from the impulse of iniquity.

The echeneis that was Pliny's prime example of occult power has become – in the guise of the echinus – a churchman's proof of God's power in nature.[22]

A fourteenth-century biological miscellany pictures an echeneis under a boat, but with no sense of scale or how the fish might stop the vessel. Thomas of Cantimpré, an earlier encyclopedist, had admitted that the ship-holding story "seemed incredible to many. But the authorities trust it so much and agree so closely that no doubt at all remains on the topic." Blessing Pliny's magical fish with Christian authority had given the old pagan lore a lasting baptism of power. Since it was Pliny who told Thomas to furnish his *equinus* with "spines (*spinae*) in place of feet,"

Figure 36. An Echeneis, Echinus, Escynus, or Equinus under a Boat, c. 1350. (The Hague, Koninklijke Bibliotheek, KB, KA 16, 114^{v})

he should also have known that Pliny had put *pinnae* or wings on the echeneis.[23]

Albertus Magnus groups his *escynus* with the crabs and fits it out it with "barb-like organs instead of feet." Though he goes on to describe the escynus as Pliny's rock-holding echinus, he calls his fish *semipedalis*, the adjective Pliny had used to state the size of a different fish – an echeneis. Pliny means that this ship-holder is 'half a foot long,' but Albertus – confounded by *spinae, pinnae, echinus,* and *echeneis* – seems to have taken *semipedalis* to mean 'semi-footed' or 'having foot-like organs.' "This escynus," he notes, "is the fish that I have described in an earlier passage as holding back a ship." He had explained that magicians use the inedible "ship-holder" to make love-potions and hate-charms. He denies that the ship-holding escynus has feet but concedes that "its feathered wings somewhat resemble feet."[24]

Since the mixups about species that confused ancient accounts of the ship-stopper did not degrade descriptions of the torpedo, that fish's

identity was less befuddling to medieval authorities, even though scribal errors and barriers of language caused some misnaming. Albertus, who sometimes calls the ray *stupefactor* ('stunner'), reports its usual Latin name as well as *barkys* and *berachi* – bad transliterations of *hê narkê* (ἡ ναρκή), 'the stunner,' misreading the initial Greek η for a Roman *b*. Vincent of Beauvais comes closer with *narco*. Thomas of Cantimpré agrees with Albert that "its numbing power is very great," and Albert records testimony from

> a truthful man who, to test it, touched it quickly with his fingertips; his hand and arm up to the shoulder immediately became so numb that with much use of hot baths, poultices, ointments, and massage he could scarcely recover feeling and movement in his arm in less than a month.

Elsewhere, milking a good story, Albert stretches his informant's suffering through six months, but the inflated testimony still stays in touch with experience: as in pagan antiquity, empirical evidence reinforced the torpedo's fame for medieval Christians.[25]

4 FROM PHILOLOGY TO ICHTHYOLOGY

The appeal to observation – personal or vicarious – still sustained belief in magic in early modern Europe. In the sixteenth century, learned physicians and pharmacologists consulted current experience as well as ancient wisdom to reform natural history, thereby propagating the fame of the remora and the torpedo. This new natural history covers a broad spectrum of botany and zoology, often with medical ends in view. Powers of observation were sharpened by progress in human and comparative anatomy, nourished by travel and field work and amplified by a novel technology of book-making that could reproduce texts and images accurately and disseminate them widely.

The access to Greek and Roman erudition opened up by printing had been unimaginable a century earlier. In the new classicism of this period, curiosity about antiquity and reverence for it were so strong that natural history became as much philological as biological. When the new science threatened or contradicted past authority, respect for reason and evidence was seldom robust enough to overcome tradition. The scholars who turned Europe toward modernity in the Renaissance did more to broadcast ancient testimony on occult power than refute it. They were better at recovering, establishing, and explicating the Greek and Latin texts that authorize such beliefs than at finding other solutions for puzzles treated as magical by the venerated ancients.

A striking statement of the new philological biology is the study *Of the Differences of Animals* published by the English physician Edward Wotton in 1552. His book is Exhibit A for the poverty of erudition: its descriptions of the echeneis and torpedo are more faithful to Pliny than the garbled recollections of Albertus, but they say nothing that had not been repeated for a thousand years. "The echeneis is near to the eel in shape," he writes – nodding to Oppian, Pliny, and even one of Pliny's lost sources, Trebius Niger – "about five fingers thick, like a large slug, … dark or blackish in color, with a sharp snout, curved almost like a hook." The torpedo has "two wings, partly bent, near its tail, … and the tail is long and spiny." Reporting the shape, size, color and other visible features of animals on every page, Wotton's elegantly printed book uses no pictures at all to show what they look like.[26]

Published only a year later, Pierre Belon's *On Water Creatures* could scarcely be more different. While treating the torpedo's powers in traditional medical fashion by referring to its coldness, Belon also depicts the ray in a way that clearly relies on independent observation. The key word is 'depicts.' The full title of the work is *Two Books on Water Creatures with Illustrations Depicting as Far as Possible Their Living Likeness*. Three of the illustrations present accurate views of the torpedo. Belon also describes the echeneis but gives no picture.[27]

The first phase of the new ichthyology – still loaded with classical learning – that Belon pioneered reached its peak in the book *On Ocean Fish* published by Guillaume Rondelet in 1554. Rondelet's pictures of the torpedo improve on Belon's in clarity and detail, though in the absence of a stable taxonomy he uses superficial markings to distinguish several 'kinds' of the ray. Citing ancient authorities on the torpedo, Greek as well as Latin, he also records his own observations of the fish's stupefying 'faculty':

> Although summer's heat was at its peak when I put my hand on it, I actually felt a sensation of cold from a torpedo long dead, … so I would judge that Galen was quite right to count contact with a living torpedo among the causes of numbness.… The cause of this numbness is cold, which is also true of opium, mandrake and henbane, yet it is not cold alone but also some unseen power naturally innate in the torpedo. For Galen also seems to ascribe this power of the torpedo not only to cold but also to its obscure faculty.

Rondelet lets his experience stand on Galenic precedent – like Jean Ruelle, another biologist who observes that Galen himself had "learned

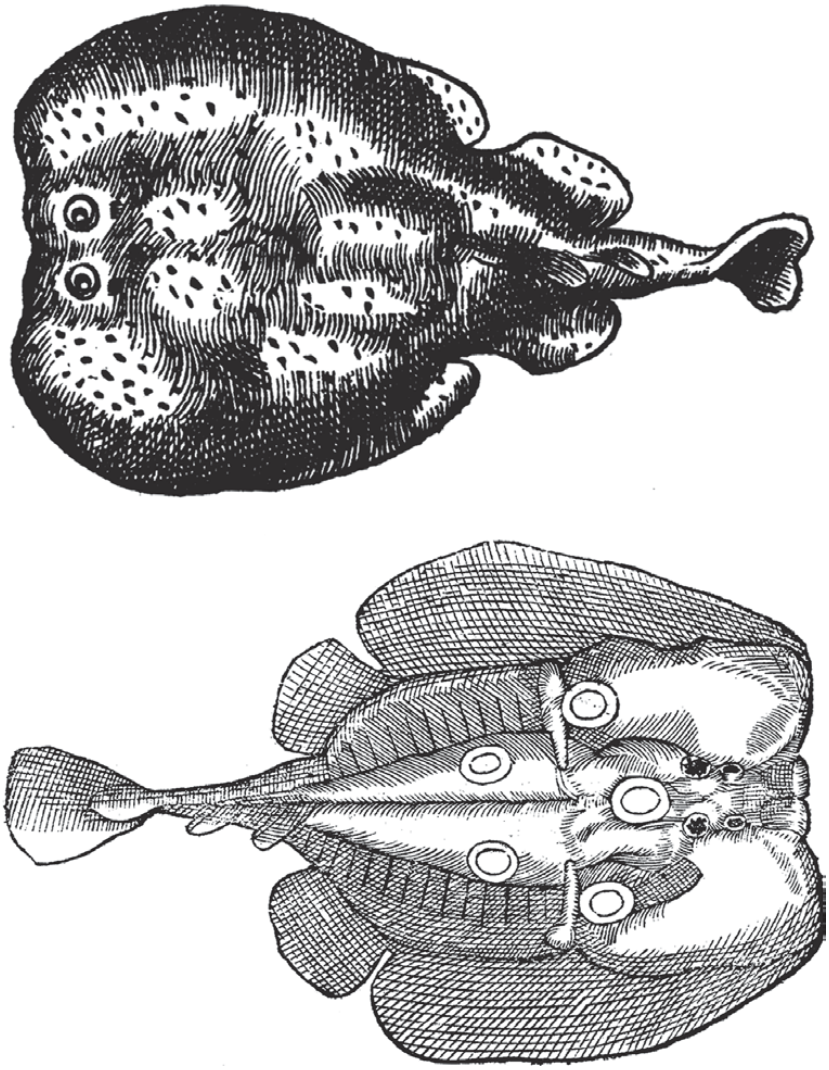


Figure 37. Belon's Torpedo, Rondelet's Torpedo.
(Belon [1553], p. 90, Rondelet [1554], p. 358)

from experience" about the ray's medical use. Since the categories that Rondelet uses to interpret his own experience are also Galen's, it is no surprise that he adds an empirical and occult power to the force of cold, customarily treated as a manifest quality within the reach of reason. He hunted for the torpedo's secrets on the docks of Venice, not just in the

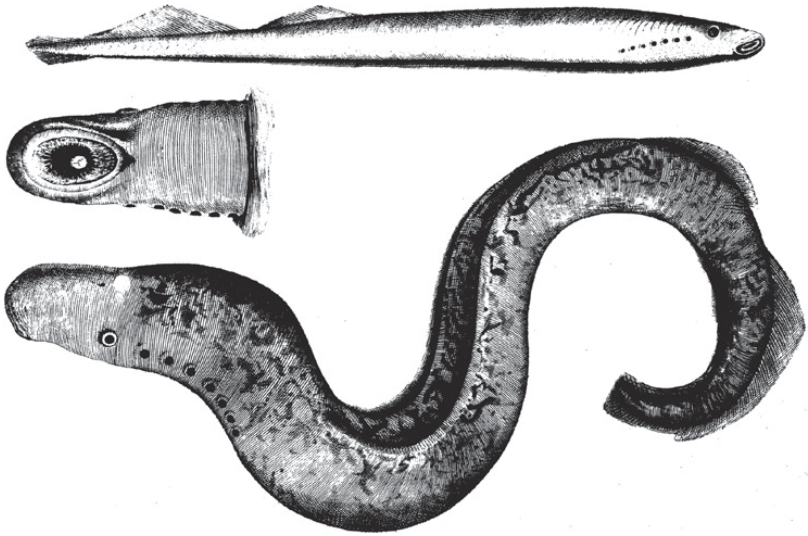


Figure 38. Salviani's Lamprey.
(Salviani [1554], fol. 62v)

pages of Galen, but his curiosity could not break the spell of traditional explanations that fostered belief in magic.[28]

The picture of the torpedo in the *Researches on Water Animals* by the papal physician, Ippolito Salviani, is more accurate than some of his other images. All of them are large and striking, which ensured the book's success. Like Rondelet, Salviani follows Galen's line on the ray's "coldness" and "unseen quality," but his argument is more intricate: since cold always increases in a dead animal, the decrease in the dead torpedo's power argues that its faculty must be derived from something other than cold – from the occult quality that Salviani locates in the whole animal, not in any of its parts. His focus on the whole animal will have rung true to any physician who knew how Galen had treated occult qualities as effects of the whole substance.

Salviani respects the ancient authorities, filling 120 pages of his beautifully illustrated book with elaborate "fish-tables" that name the animals in Greek, Latin, and vernacular languages. Three columns of names are keyed to a column of "attributes" and to one column each of references to Aelian, Aristotle, Athenaeus, Oppian, Pliny, and "various authorities" – the whole apparatus spreading across two open pages. At the end of the book a "catalogue of authorities" mentions 150 names in all, mostly Greek or Roman – including Galen.[29]

Konrad Gesner gives twelve dense pages and seven illustrations to the torpedo in his huge volume *On the Nature of Fish and Water Animals*. A learned son of a learned century, Gesner exhausts the available classical literature on the ray and also surveys contemporary findings. As a witness for milder effects from the torpedo than those claimed in ancient and medieval sources, he cites Pierre Gilles, who – like Gesner himself – had translated Aelian. Gilles also wrote on the fish of Marseilles. From "a Venetian painter" Gesner acquired an illustration of the ray that resembled nothing in Rondelet, making him doubt its reliability. Rondelet was his main source of ichthyological information. Admitting that "no one understands what power the torpedo has," he adds nothing of interest to Rondelet's analysis of the ray's effects.[30]

The same can be said of the posthumous and equally learned treatise *On Fish* by Ulisse Aldrovandi. "Whatever the ray's numbness may be," writes Aldrovandi, "it arises from a certain obscure and occult quality and not from a manifest one, as can be proved from reason and from the authority of the most respected authors." The reason and authority were actually Salviani's, who had insisted only on adding an occult quality to the ray's coldness, not on the occult quality exclusively. Whether by opting for manifest qualities alone or by accepting Salviani's compromise, Aldrovandi – who died in 1605 – could have gained little. To discredit occult qualities required a complete repudiation of traditional physics, its metaphysical framework and its applications in medicine – momentous reversals that awaited Gassendi's generation.[31]

Between Belon's time and Aldrovandi's, natural historians who tried to identify the echeneis and explain its properties also helped reinforce belief in occult qualities by repeating and accepting tales of shipstopping. Belon puts the mysterious fish in the last section of his book with "the scourings of the oceans called 'jetsam'"– oddities like the seahorse and the seahare – and he follows Pliny in making it slug-like in form and behavior. Noting that fishermen in Corcyra take the fish in nets, he adds contemporary data to Pliny's stories of stalled Roman ships. Rondelet attributes the scarcity of current information on the echeneis, which he calls "exotic and unknown," to confusion of the several varieties described by the ancients. He repeats Adam Lonitzer's opinion that "no natural explanation fits" the properties customarily ascribed to the echeneis. And he undermines tradition by trying to clarify the fish's identity and explain its powers mechanically.[32]

The pseudo-Aristotelian *Mechanics* inspired his explanation. That work – newly accessible in the Aldine Greek Aristotle – treats the

rudder of a ship as a lever, whose position astern enables it, despite its small size, to move the much larger vessel. Rondelet extends this mistaken principle to the echeneis by arguing that the fish attaches itself not to the keel of a ship but to its stern or rudder, from which position its leverage could make the vessel lose headway. Rondelet had been told that ships newly coated with pitch attract lampreys, and his own experience on a voyage to Rome convinced him that the fabled ship-holder is actually a lamprey. "We were sailing rapidly along in a fine trireme," he wrote,

> when we saw our course checked, and when the passengers asked what the cause was, at last it was discovered that it was done by the power of a lamprey attached by its mouth to the rudder; when it was captured and served for dinner, the fish paid a price for the delay (*mora*) it had caused. I have the most reliable witnesses to this fact in the noble and important men who sailed in this same ship.

Far from debunking tales of ship-stopping, Rondelet updates them by adding his personal testimony to the ancient stories, but – like Plutarch – he substitutes a mechanical explanation for the usual occult cause. Since he uses occult power to account for the torpedo's very different effects, however, he does not oppose all such explanations. Yet his distrust of magic emerges when he insists that Aristotle was reporting another's opinion, not his own, in mentioning that the echeneis could be used to delay lawsuits and make love potions. "Those who believe this," says Rondelet, "seem to have transferred that obscure faculty of delaying ships which they suppose it has to binding women tight with ties of love." The insight into the role of analogy in magic is impressive.[33]

Neither Belon nor Rondelet publishes a picture of the echeneis, though Rondelet prints an illustration of the lamprey. Salviani says nothing about the echeneis. Gesner gives it five pages, mainly repeating Rondelet, but there is no picture – though the next chapter shows the echinus as a sea urchin. While Gesner outdoes Rondelet only in his coverage of the classics, he attaches this second-hand observation – perhaps of a goby – at the end of his chapter on the echeneis:

> A little fish has been found at Emden on the sea in Frisia – as a friend told me – which was four fingers long, had very fine skin without scales, a head larger than its body and small eyes. The rest of the body was conical, and it had something cup-shaped under its chin, probably using it to stick to rocks, for his story was that when he pressed the

Figure 39. Gesner's Echinus.
(Gesner [1558], p. 416)

> hollow of it with his finger, the fish stuck to him and he could carry it around.[34]

Ferrante Imperato's *Natural History* – first published in 1599 to display the apothecary's collection and brag about it in Italian – offers a précis of Rondelet's lever analogy, though the fish he identifies as "the remora of the ancients" is not Rondelet's lamprey. The life-sized illustration and brief description correspond to the modern remora, still often called a 'pilot fish': a caption above the picture explains that the fish "sticks itself with the top part of its head to ships and such animals as whales, steadying their course." Aldrovandi has seen two pictures of the echeneis, one resembling Belon's fish, the other taken from Imperato, whose version he prefers. Although the suctorial apparatus of Imperato's fish is on top of its head, Aldrovandi thinks it resembles Gesner's goby-echeneis, whose sucker is under its chin, and he prefers Plutarch's mechanical explanation of ship-stopping to Rondelet's.[35]

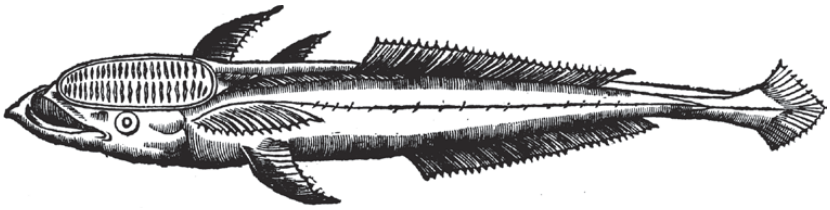


Figure 40. Imperato's "Echeneis or Remora."
(Imperato [1672], p. 684)

From the Polish physician Jan Jonston, one of the last to write a *Natural History* in the style of Aldrovandi and his predecessors, we see what a mess he inherited from reports on the echeneis by earlier writers:

> On the remora or echeneis … I can write hardly anything certain, so much are the authors divided into opposing camps.… The fish is described variously by the ancients … , and there is no agreement on it among the moderns.… Likewise for the explanations of its faculty of holding ships.… Hardly any of this is probable.

Recorded around 1649, Jonston's exasperation with clashing explanations applies not so much to the pioneering ichthyologists as to other experts – physicians, philosophers, philologists, theologians – who concocted a variety of ingenious analyses of the powers of the echeneis and also of the torpedo. Many of these writers still treated the two fish as a pair, as Pliny had.[36]

5 SCALING THE HEIGHTS OF IMPUDENCE

The debate on the echeneis among Jonston's predecessors was both clarified and constrained by philology. Clarification began when a textual critic settled the meaning of *echeneis* in Pliny, but philological baggage encumbered the research of natural historians and other writers who kept reviewing the textual and linguistic aspects of the question with stupefying persistence. Ermolao Barbaro, whose *Reproofs on Pliny* (1493) was a major offensive in the Quattrocento Pliny wars, established the textual identity of the fish described by Pliny in book 9. "One must write *echeneis*," he concludes,

> for the fish called *remora* or *remiligo* in Latin.… For the *echinus* is a different fish called *erinaceus* in Latin. This was the disgraceful error of a certain modern philosopher who describes the shape and properties of the two fish as if they were one, blending very different natures into a

> single monstrosity. Would that this were his only sin in natural history, so that there would be some basis for his having won the title 'great.'

Later critics were even harsher in blaming the conflation of species on the sainted Albert or Ambrose. By mid-century, when Gerolamo Fracastoro set off an influential exchange of polemics on the echeneis, the lexical – though not the biological – identity of Pliny's ship-holder was more or less settled.[37]

Fracastoro devotes the whole eighth chapter of his book *On Sympathy and Antipathy* to "the echeneis and how it can make ships stand still." He thinks that like objects attract one another sympathetically by trading atoms or emitting 'spiritual species'– form-bearing packets of very fine matter. Through these exchanges of matter the echeneis operates as a sympathetic cause. Or else – recall Plutarch's algae and seaweed – it might be a sign of another such cause: the fish's rock-dwelling habits make its attachment to the ship a sign of submerged magnetic formations that emit species in sympathy with the ship's nails or some other part of it. Alternatively, the echeneis itself causes sympathetic attraction by exchanging species with magnetic rocks or by emitting

> corpuscles in the manner of the torpedo.... Because of its own resistance, the ship cannot be drawn down to the bottom, nor can the echeneis be removed from the ship because of its own strong affixion owing to a vacuum, so that the ship is powerfully stopped or at least retarded.

Something firmly attached to the ship, either the echeneis or the ship's magnetic parts, forms an attractive system with magnetic rocks submerged and fixed in place. Trapped by two immovable centers of attraction, the ship slows or stops.[38]

Girolamo Cardano, a physician like Fracastoro writing at mid-century, supplied the next chapter of misunderstanding. To illustrate his lapses, Rondelet quotes from Cardano's encyclopedic study *Of Subtlety*, which relays a medley of medieval mistakes about the echeneis:

> 'There are also fishes famous for their powers, such as the torpedo, which the Genoans call *tremoriza*. It is very common and of the genus of the echinus, which has many spines that – by a certain power innate in it only when living – numb and stupefy the hands of fishermen who capture it. But there is another echinus, belonging not to the genus of the spiny torpedo but to the bivalves (*conchae*), which the Latins call *remora*....' See [says Rondelet] how many errors he has put into a few words. First, he falsely ascribes to Aristotle his conclusion from similarity of name and effect that the remora and torpedo [*tremoriza*] are

> one.... Next, he seems to put the torpedo in the genus of the echinus.... Then he calls the remora 'echinus'... when he ought to call it 'echeneis.'

Cardano eventually untied some of these knots, which are even more tangled than the medieval encyclopedias and show the careers of the echeneis and the torpedo intertwining. Cardano's later treatise *On Variety* acknowledges Belon and Rondelet, following the latter by calling the echeneis a lamprey and using the lever explanation to account for its powers.[39]

Cardano brought nothing to the echeneis controversy but bewilderment. Thanks to Julius Caesar Scaliger, his mistakes were immortalized. Soldier, scholar, botanist, and physician, the elder Scaliger was a polemicist *extraordinaire*, and Cardano's long, rambling, blundering books were an enticement to controversy. The title of Scaliger's *Fifteenth Book of Exoteric Exercises on Subtlety* jeers at him, implying that fourteen others have or should have come first: the book supplies 365 'exercises'– one for each day of the year – to 'non-experts.' Scaliger knew how to be funny and cruel: his erudition is diverting in its range, compelling in expression. Long after his other books and victims were forgotten, the *Exercises* held an audience. Though it lacks any real depth or unity, the book helped determine the fate of occultist beliefs in the Scientific Revolution: the maligned Cardano could hardly have avoided magic when writing about 'subtlety,' thus giving Scaliger another easy target.

But Scaliger aims his remarks on the echeneis more at Fracastoro than at Cardano, whom he mocks for confusions that Rondelet had already spotted: a cheap shot beats none at all. Fracastoro is bigger game for Scaliger, who finds his causes (atoms, species, vacuum) incoherent and the small size of the echeneis disproportionate to the powers claimed for it. He dislikes Fracastoro's reductive analysis, and he accounts for ship-stopping in a way that was friendlier to magic:

> Just as the torpedo forces numbness into the hands through a line even if it is not touched – for this is no fable – this animal affects the motion of a ship in the same way.... Some things, like the poles, are always immobile because of their function; some by reason of their place, such as the central part of the earth.... On the other hand, some things are always mobile by function, such as the heavens; and others, such as rivers, in the nature of their place. Hence, in some things, such as the magnet, there is a power of moving; others have a contrary faculty, and of this sort – namely, those that remove motion – one instance is the echeneis. But this is explained by basic principles. Just as rest and motion are contraries, so also are their efficient causes contraries.... The principles of heat in fire have been disclosed to no one, and the same is true of

> the principles of rest in the echeneis. For it is the height of impudence to reduce all things to manifest qualities, as many Alexandrians have rashly resolved and have struggled in vain to do.... Many things have properties other than the qualities of the elements: from sober spirits they remain completely hidden, but they deceive the curious, those who think they can reduce all things to fixed, manifest qualities.... And still they ridicule that saving refuge of occult properties.[40]

Scaliger's rant was broadcast not only by the *Exercises* itself but also by students of natural philosophy who read it for entertainment or to improve their Latin. Francesco Suárez, for example, cites Scaliger and Fracastoro via other Jesuit commentators in a chapter against action at a distance that also discusses the torpedo. "I judge a thing to be very occult," he declares, "if it is necessary to trace it back to some power of a higher order." He admits uncertainty about the source of the ship-stopper's power while suggesting three possibilities: either the fish impresses a quality on the ship that counteracts the vessel's impetus; or the ship cannot overcome the fish's internal quality of immobility; or the fish holds the ship in the same way that a man holds a stone in his hand. "However this happens," Suárez concludes, "there is no doubt that it arises from a wondrous and occult virtue, perhaps with the special and connatural influence of the heavens." Celestial influence is only one occult agency invoked by Suárez and many others to account for ship-stopping.[41]

6 YESTERDAY'S FISH IN TOMORROW'S SCIENCE

After more than twenty years in prison, Tommaso Campanella was still a scientific celebrity in 1620. In that year, the defender of Galileo published his book *On the Sense in Things and on Magic.* In order to show that man-made as well as natural objects have a 'consensus'– a 'co-feeling'– or sympathetic vitality, he explains how one of two identical ships goes slower because it has less consensus than the other with the goal of the voyage. "It seems certain enough," he adds, "that in the ship's wood there is a *sense* of navigation that is removed by the remora; this induces a dullness which, when amplified, benumbs the whole ship just as another fish benumbs the fisherman's hand."[42]

Campanella's vitalism was fervent, just when his most creative contemporaries – like Galileo and Descartes – were promoting mechanical explanations, which were not entirely novel. Writing in 1559 *On the Hidden Miracles of Nature*, for example, Levinus Lemnius may have been thinking of Plutarch when he linked ship-stopping with the organic burden on a ship's bottom. Bartholemew Keckermann, who taught

philosophy in Gdansk until 1609, offered an idea better suited to icy Baltic waters than to the Mediterranean. Like the torpedo, according to Keckermann, the echeneis emits spirits and humors – especially "a very cold and sticky humor that somehow freezes the water around the ship's rudder and makes it hard to move."[43]

As Fracastoro had suggested, atoms and corpuscles can be proxies for species, spirits, or humors. Tiny particles proliferated as the seventeenth century wore on, while Gassendi and his English disciple, Walter Charleton, helped revive Epicurean atomism as a dogma of science. Since there is no natural effect without a cause, no cause without motion, and no motion without mediate or immediate contact, insensible effects, like those arising from the torpedo and echeneis, must be traced – according to Gassendi – to such invisible mechanisms as rays, spirits, effluvia, corpuscles, miniscule hooks, little strings, and tiny rods. Some critics choked on those atomic contrivances, but Charleton sees nothing silly about attributing a "stupefactive emanation" to the torpedo that stiffens a fisherman's hand.

The echeneis was harder to manage, however: a tiny fish is so bad a fit for the dead weight of a huge ship that no flood of emanations or corpuscles could do the job. Instead, Charleton and Gassendi suggested adverse currents coinciding with the discovery of an echeneis stuck to a ship. A ship-stopping current was a reasonable proposal; in fact, that phenomenon was the subject of a serious scientific study in the twentieth century. It seems odd that so compelling an idea emerged only after scholars had discussed the echeneis repeatedly for two millennia, but – as far as I know – currents first come up in this context in the seventeenth century. Compared to the ingenuities of Keckermann and the abstractions of Suárez, currents seduce one's common sense.[44]

The comparison resonates with comments by Francis Bacon on the ancients:

> Discoursing causes (like those fishes they call remoras that are said to stick to the sides of ships), they have in fact hindered the voyage and progress of the sciences … and have brought it to pass that the inquiry of physical causes has been long neglected.

Bacon wanted the "final causes" pursued by Suárez and other masters of the schools to yield to empirical inquiry into "physical causes," yet as long as science allowed physical explanations as contorted as Keckermann's, Bacon's way was no straight path. Nonetheless, the investigation of the echeneis – unlike research on the torpedo – would be completed through

natural historical inquiry more or less as Bacon promoted it. Yet Gassendi and Charleton settled on the simple and convincing notion of adverse currents only after considering the effects of the echeneis in terms of other agents (corpuscles, effluvia, and so on) as heavy with metaphysical commitments as the final causes of the scholastics.[45]

In deciding to look for *some* cause of the effects attributed to the echeneis, Gassendi and Charleton concede that the usual ship-stopping stories deserve attention: a good tale tells itself, over and over. But Athanasius Kircher, the sometimes credulous Jesuit polymath, was not intimidated by tradition. Puzzled by Fracastoro's ability to find a vacuum in the depths of the sea and by his failure to ask why just one of Antony's ships was pulled by magnetic rocks, he set to

> investigating the matter more deeply, whence, unless others correct me, I conclude that this little fish is simply a fable … and that probably no such animal exists.… I do not deny that ships are sometimes motionless in mid-course, but I believe this should be ascribed to adverse tides of the sea or to currents, … not to an occult quality.

By no means shy of wonders, Kircher rejected the ship-stopping stories despite their venerability and, in part, on the basis of contemporary evidence. In a friend's collection he saw a specimen labeled 'remora' that seemed not to match Pliny's ship-holder, and he concluded that the fish that stick to ships are often lampreys. "I have so little confidence in the story (or rather the fable) of the echeneis," he announces, "that I should say little more of it. For in modern times, when the whole globe has been traveled by so much voyaging, who has seen anything like it in the ocean?"[46]

In the same way, the physician Santorio Santorio found the ship-stopper's occult qualities incompatible with the post-Galenic, quantitative physiology that he helped construct. But on the basis of authority and experience, another innovator, Daniel Sennert, reached a conclusion more faithful to Galen and Aristotle, noting that Santorio

> writes that the maintainers of occult qualities have been too credulous …, [and] I confess that many fabulous and superstitious tales go up and down; but … all things are not fabulous which are spoken of as … occult qualities … : Loadstones … , Opium … , Poysons and Antidotes …, Peony Root … , the Nephritick Stone … are known by experience to be really true.… So also …of the Echeneis… Pliny Book 32.1 confirms.

The diversity of opinion among these very different thinkers – Sennert, Santorio, Kircher, Gassendi – shows that in the middle of the

seventeenth century there was as little agreement on criteria of judgment for deciding such controversies as on the identity of the echeneis. But the fish's usefulness as a proof of occult powers was near its end. In *Pseudodoxia epidemica*, while discussing the plague of "false or dubious" beliefs about animals, Sir Thomas Browne spares only a few words for the echeneis, and they show its reputation waning. "Many more [beliefs] there are whose serious enquiries we must request of others," Browne writes, as "whether the Story of the Remora be not unreasonably amplified."[47]

Ineffective, if not unreasonable, was the concurrent increase of efforts to explain the torpedo's effects through mechanisms that only begged the question more discursively than the "narcotic faculty" proposed by Kircher. Ambroise Paré wrote that the ray "emits a distillation." Keckermann opted for spirits and humors. Sennert chose spiritual species. Charleton liked emanations where Gassendi had mentioned corpuscles. When Robert Boyle describes "stupefactive… venomous exhalations that expire … from the animal … and are breathed in together with the air they infect … [or] poisonous steams [that] get in at the pores of the skin," he only reformulates the common views of his day.[48]

But in the biophysics of Giovanni Borelli a coherent anatomical context emerged for a different sort of mechanism, one restricted to effects of parts of the ray's body on its victim's, both bodies analyzed as machines. No poisonous aura or occult faculty can account for the ray's effects, Borelli argues, because these effects are absent in certain parts of it and while it rests. Experiment shows that its numbing effect feels like a blow on the elbow and has the same consequences. Borelli concludes that the effect is caused by repeated blows struck against the victim's fingers by muscular movements of the fish.[49]

Like Borelli, many early modern investigators report first- or second-hand experience more lucidly and more often than earlier authorities. Kircher claims to have handled the ray. And though he finds its effects brief and localized, he still needs the usual "insensible quality," as well as the manifest quality of cold, to explain them. Half a century earlier, Thomas Erastus had also confronted tradition with experience:

> Common consensus supports the amazing power of this fish. But having inquired zealously and most diligently into these matters, I have been able to discover nothing certain. In Venice, many fishermen deny that this animal ever has a great numbing power.

Erastus doubted Galen's views on the ray as well. Yet willingness to challenge authority and openness to fresh experience failed to disqualify the torpedo as evidence of occult powers.[50]

A remark of Pierre Bayle's in reviewing Francis Willughby's *History of Fish* suggests – not without irony – that the ancients still commanded the respect of intelligent observers on the eve of the Enlightenment:

> What is said here of the torpedo … makes us realize that the tradition of the Ancients on the numbing power of this fish is not entirely false. It is pleasant when the Moderns behave decently, for those of a misdirected spirit have no greater satisfaction than in giving the lie to Aristotle, Pliny, Aelian, Gesner, Rondelet and others. The author of this book is not one of them.

As usual, Bayle is less than straightforward, no doubt understating the gap between Willughby and his predecessors, but he does not exaggerate the durability of the ancient beliefs contested by his more progressive contemporaries. Current experience kept confirming the fact of the torpedo's strange property, while no new explanation seemed better than any other nor, for some, more credible than the time-honored occult qualities.[51]

The torpedo's power lasted long in the philosophical and physical theories that sustained magical thinking. The transmission of the ray's effect through fishing implements seemed to be action at a distance. Suárez, anxious to preserve the Aristotelian exclusion of such action, teaches that the fish attacks its prey by emitting a poison or by altering the intervening medium. Bacon, scourge of the schools, is more flexible, seeing in "the *torpedo marina* …touched with a long stick … one degree of working at a distance, to work by the continuance of a fit medium." Browne simply asserts that "the torpedo … alive hath a power to stupefy at a distance." Like other writers, however, he confines the effect to the living fish – an echo of Galen that supports the customary link between the whole substance and substantial form, which had long been the metaphysical ground both of occult qualities and of life. Since the living human soul was a crucial case of this abstruse bit of metaphysics, it was natural to make life a link in the chain connecting the whole substance with substantial form. This vitalism is explicit in the treatise *On the Occult Powers of Drugs* by Erastus, who confirms the widespread assumption that a dead ray will have lost its power.[52]

7 THE BEST OF TIMES AND THE WORST OF TIMES

Implicit acceptance of the link between the *whole* substance and occult powers may also explain the rarity of attempts to *localize* the torpedo's power anatomically before the advances made by Francesco Redi and Stefano Lorenzini in the 1670s. Lorenzini and Redi joined other scientists and naturalists of the late seventeenth and eighteenth centuries in bringing the saga of the two magical fish nearer its close, but the end of the story would take too long to tell in full.[53]

Suffice it to say that when voyages of exploration settled the remora's biological identity and connected a particular fish, securely identified, with the unexciting habit of sticking to boats, there was no wonder left to explain; at most, the fish's behavior might be a simple, mechanical cause of ordinary retardation. Precise identification based on credible observation was enough to disenchant this one magical object, which lost most of its interest as a problem in natural philosophy by the end of the seventeenth century. At the start of that century, however, naturalists, physicians and philosophers had still been trying to solve the echeneis question with the same ingenuity that they applied to the torpedo, which in some ways stayed controversial until the middle of the nineteenth century.

For the torpedo, the basic facts were never in dispute, and identity was not the problem. But facts and identities were the meat of sixteenth-century natural history and of the Baconian natural philosophy that followed. Yet when the new science created corpuscular, mechanical, and other theoretical frameworks well suited to its perceptions of facts, there was still little in the theory to make sense of the universally accepted facts about the torpedo. The failure of seventeenth-century science to explain the ray's troubling property motivated Enlightenment scientists to examine it at a level of detail not required for the remora, which lost its notoriety just as the torpedo was reaching its zenith as a scientific problem. The same period, roughly the century between 1670 and 1770, saw the emergence of a post-Baconian program for natural history less interested in properties – least of all occult properties – of natural objects than in their classification. This new attitude helped seal the fate of some magical objects when, in the way of the echeneis, their notoriety depended on their obscure *identities*. But other magical objects, like the torpedo, remained controversial and possibly occult as long as science could give no convincing account of their evident *powers*.[54]

In the meantime, while the Scientific Revolution was in full career, the tale of two fishes was still convincing enough to engage such a mind as Gassendi's. Another patriarch of Gallic doubt, Michel de Montaigne, had found a place for both magical objects in his "Apology for Raymond Sebond," where he catalogs the abilities of animals in order to highlight the vanity of the human condition. Since Montaigne's point is theological and epistemic rather than physical, his worry is the factuality of these famous properties and marvelous powers, not the causes underlying them. And the evidence he cites in support of his facts is textual and classical, the familiar stories of ship-stopping and the usual claims for action at a distance from Pliny and Plutarch.[55]

In a later essay that takes up the feeble evidence brought against witches, Montaigne looks closer at the alleged facts and also at the impulse to explain them:

> How free and vague an instrument is human reason. I see ordinarily that people, when facts are put before them, are more ready to amuse themselves by inquiring into their reasons than by inquiring into their truth.... They skip over the facts, but they carefully examine their consequences. Usually they start like this: 'How does this happen?' What they should say is 'but does it happen?' Our reason is capable of filling out a hundred other worlds and finding their principles and texture.... We know the foundations and causes of a thousand things that never were.

Pliny's amazing echeneis, which Montaigne accepts on textual authority, is one of those thousand things that never were. As Barbaro had shown when he established its textual identity, the echeneis was a literary monstrosity, a fiction of conflated species, but it was a magical figment that beguiled the centuries.[56]

The decline of magic in the seventeenth century was a step toward modernity and a core moment of the Scientific Revolution – though it was not solely the result of that movement. The very finality of the decline of magic, its catastrophic loss of respectability among educated people, helps explain our own difficulty in grasping its historical role and the reasons for its demise. The tale of the echeneis and the torpedo shows, as one might expect, that the undoing of this old tangle of beliefs was slow and complicated. The gradual disenchantment of these strange fish between 1500 and 1800 shows how magical thinking ceased to be persuasive and reputable. The particulars of the story, which tells in detail how new sciences and philosophies struggled to be born as ancient magic died, are less familiar.

PART III

HERMETICA

CHAPTER EIGHT

HERMES THE THEOLOGIAN

Thus does man fashion his gods.[1]

1 ENDORSING MAGIC

Marsilio Ficino, who restored Plato to Western Europe, also theorized about magic and translated some of the Greek Hermetica. But many more Hermetic texts survive than those that Ficino translated. The Greek fragments collected in the fifth century by John of Stobi were not read in the West until after Ficino died, and centuries more passed before any European could study most of the Hermetica preserved in Arabic, Armenian, and Coptic – all languages beyond Ficino's range. Since the great Platonist was a master of Greek and Latin, however, some Hermetica that circulated in medieval Europe were as familiar to him – and his peers – as Cicero, Vergil, and Boethius. One such Latin text was the *Asclepius*, denounced by Augustine a thousand years earlier.[2]

Because the *Asclepius* had been read in Latin since the fourth century, even before Augustine attacked it, Ficino needed no translation. He had seen it by 1456, still in his early twenties, seven years before he turned fourteen Greek discourses into Latin under the title *Pimander*. When that book was printed in 1471, the *Asclepius* was not part of it. In 1505, Jacques Lefèvre d'Étaples became the first to publish Ficino's newly Latinized Greek texts in the same book with the older Latin work, which had long been famous – or notorious. Lefèvre had already appended his own synopsis to a Paris edition of the *Pimander* in 1494, but Ficino made no such commentary – neither for the *Pimander* nor for the *Asclepius*.[3]

Two passages of the *Asclepius* tell how Egyptians used magic to worship demons. The sixteenth Greek discourse – not translated by

Ficino – suggests that magic words are by nature hieroglyphic, claiming that "the very quality of the speech and the sound of Egyptian words have in themselves the energy of the objects they speak of." Such power is unknown to the Greeks, says Asclepius: presenting a speech of his own, he complains that they use only "empty speeches" and that "the philosophy of the Greeks is an inane foolosophy of speeches." And yet the *Korê Kosmou* in the Stobaeus collection hopes that "philosophy as well as magic might nourish the soul." In lines that read like a spell from the Magical Papyri, a Coptic Hermetic text shows what such nourishment was:

> I praise you. I call your name that is hidden within me: *a ô ee ô êêê ôôô iii ôôôô ooooo ôôôôô uuuuu ôôôôôôôôôôôôôôôôôôôôô*. You are the one who exists with the spirit. I sing a hymn to you reverently.

From any philosophical perspective, those words of magical power are gibberish, but the disciple of Hermes chants them with religious reverence.[4]

The blend of magic, religion, and philosophy seen so plainly in modern studies of the Hermetica – the Greek and Latin texts edited by Nock and Festugière, the Coptic and Armenian texts of Mahé, the comprehensive analysis of Hermetic literature by Fowden, the study of Arabic Hermetica by Van Bladel – was opaque to Ficino because he lacked most of the works that actually testify to Hermetic magic, the Latin *Asclepius* being the salient exception. Nonetheless, students of the Renaissance have amalgamated his construction of a theory of magic, his recovery of other Greek Hermetica, and his few remarks about the *Asclepius* with his masterful work on Plato and the Neoplatonists as if they were phases of the same grand project to promote a 'Hermetic tradition' with magic at its core, just at the moment (the Renaissance) "when every form of highest knowledge becomes unified under the cloak of Hermetic mystery"– in the words of Eugenio Garin.[5]

That was also the view of Frances Yates in her seminal study of Giordano Bruno, where she takes up a problem that confronted Ficino and other admirers of Hermes: Augustine had repudiated the Egyptian in his *City of God*. Must the saint's verdict stand? In Yates's account, Ficino is the prime avatar of "the Renaissance Magus" for whom "the magic in the *Asclepius* was the most attractive part of the Hermetic writings. How was a Christian Magus to get round Augustine," she asks. "Ficino did it by quoting Augustine's condemnation, and then ignoring it, though timidly, by practicing magic."[6]

Figure 41. Greek Magical Papyrus, Fourth Century CE.
(University of Oslo, *PGM* 36.1–34)

When Yates wrote that Ficino cited and then flouted Augustine's censure of Hermes, she had read the letter he sent to Cosimo de' Medici in 1463 to introduce the *Pimander*. But her claim that Ficino ignores Augustine "timidly, by practicing magic" covers a multitude of interpretations reaching to the other end of Ficino's career – his last decade, inaugurated by the *Three Books on Life* of 1489. Whether Ficino ever *practiced* magic is important – and probably not decidable. That he *promoted* magic is certainly true. But there is no reason to call him "a Christian Magus" – much less the precursor of that "Hermetic magus of a most extreme kind," Giordano Bruno – just because he translated some Greek Hermetica and recognized Hermetic authority.[7]

Did Ficino's respect for the putative author of his *Pimander* oblige him to admire the sorcerers who wrote magic manuals like the *Picatrix*? Since he uses the *Picatrix* in *De vita 3* without ever mentioning it, he seems to have been cautious about endorsing magic in public. His Latin *Pimander* is itself an endorsement, of course: but of what?[8]

2 HERMES IN SIENA

Hermes became gloriously manifest in the Duomo of Siena between 1487 and 1489, when the majestic marble panel created by Giovanni di Stefano was set in the floor of the cathedral – in the years when Ficino's main project was his *Three Books on Life*. Before entering the cathedral through its main portal, a worshipper sees this warning on the pavement:

> CASTISSIMUM VIRGINIS TEMPLUM CASTE MEMENTO INGREDI
>
> MIND YOU ENTER CHASTELY A VIRGIN'S TEMPLE MOST CHASTE

Virginal purity is a distinctly Christian virtue, but the next sight, on the pavement inside, is a pagan god. Why does the Virgin want her chaste temple guarded by a heathen deity? Can a Christian heart be pure in the presence of a god whose temples housed demon-souled statues that lived and spoke and worked wonders?[9]

The faithful who approach the Siena cathedral first see the (heavily restored) facade begun by Giovanni Pisano in the late thirteenth century, where prophets, patriarchs, and even dumb animals predict and prefigure the Virgin's unique role as mother of God – not only David, Solomon, Isaiah, and other Jews but also a few prescient Gentiles, including Balaam, Plato, Aristotle, and a Sibyl. Starting with scenes of Mary's youth and rising through images of her ancestors, the lower facade ascends above the peak of the central door to a statue of the Virgin holding the child Jesus. From outside the doors, the pavement reaches through the façade, continuing in the immense marble flooring inside, built to rival Solomon's temple as the Book of Chronicles describes it.

The story on the floor starts outside with images of a Pharisee and a Publican in front of a temple, as in Luke's parable. To the Pharisee's left a vessel holds honey (*mel*), to the Publican's right another holds gall (*fel* in the original, now *lac* or 'milk'), the sweet and bitter juices of Jewish and pagan belief. The design implies progress in cult, creed, and prophecy, showing how ancient faith and worship, even for Jews and pagans, foreshadowed the mystery revealed in Mary's motherhood. Inside the church, the marble pavement never shows her divine son, whose place is high above. The floor is the church's bottom, sacred space but too low for real divinity. It is the whole building's foundation, however, a fitting place for the Gentile and Jewish subjects that fill the pavement through the transept. Like the Marian prophecies outside the church, the marbles inside on the floor – also heavily restored – foretell a blessed future, when God's Son will direct the final episodes of sacred history.[10]

Figure 42. Statue of a Sibyl in Siena, 1284–96.
(Art Resource, from Siena, Museo dell' Opera Metropolitana)

The Hermes inlay is the first of five in the nave, flanked by two other groups of five in the aisles; the subjects of all fifteen are non-Christian. Most of the named figures on these rear sections of the floor are female, attendants for the holiest of all women who reigns on the facade.

After Hermes in the center come four mythological or secular images. The Roman she-wolf suckles Ascius and Senius, sons of Remus and Siena's eponymous heroes. Then a Roman eagle rules the center of the world. The originals of these two marbles were placed more than a century before Hermes, but the next came almost twenty years later, Pinturicchio's allegory of the hill of knowledge: at the top of an island, we see a chastely clothed Science awarding a palm to Socrates and a book to Crates, above naked Fortune with her sail, shipwreck, sphere, and horn of plenty. Last of the central five and closest to the altar comes the oldest marble, perhaps from the late fourteenth century, a wheel of fortune with four philosophers: Aristotle, Euripides, Seneca, and Epictetus.

Figure 43. The Phrygian Sibyl on the Floor of Siena's Cathedral, Late Fifteenth Century. (Bridgeman)

In the aisles are ten Sibyls, carved a few years before Hermes. They predict Christ's divine sonship, incarnation, miracles, passion, resurrection, and second coming in judgment. The Delphic, Cimmerian, Cumaean, Erythraean, and Persian Sibyls are to the left of Hermes, on his right the Libyan, Hellespontic, Phrygian, Samian, and Tiburtine. One or two Sibyls on the left are by the same Giovanni di Stefano who made the Hermes panel; his father, Stefano di Giovanni (Sassetta), may have created a knightly Samson for a space nearer the altar around 1426. At the

transept, after the nave's fifteen images, begin depictions of Moses, David, Elias, Ahab, and other Old Testament heroes.

Hermes is farthest from the altar in the center of the church, flanked by the Sibyls of Delphi and Libya. He is the first pagan to herald the Christian future, and his panel identifies him as a contemporary of Moses. From Hermetic Egypt, through Socratic Greece, the Rome of Remus and the scattered African, Asian, and European lands of the Sibyls, the floor of the nave sweeps through great reaches of pagan time and space as Gentiles make straight the way of the Lord. This is the job of the splendid Sienese Hermes. He is a heathen prophet of Christian truth placed among icons of pre-biblical, para-biblical, and biblical scripture. This Hermes is an ancient theologian – by no means a magus.[11]

3 SIBYLS AND EGYPTIANS

Medieval Christians learned about the Sibyls mainly from the *Divine Institutes* of Lactantius, an erudite and eloquent apologist who read Greek but wrote in Latin early in the fourth century. Although we now have twelve Sibylline books compiled over a space of nine centuries, starting in the second century BCE, Lactantius names only ten Sibyls – the ten seen in Siena. The pagan side of Sibylline wisdom is best known from the Cumaean seer in the *Aeneid*. Since the surviving books preserve Jewish apocalyptic under Christian influence, they promote an aggressive monotheism, which is why Lactantius praises their predictions as holy and trustworthy. He introduces the Sibyls on Varro's authority in the first book of the *Institutes*, presented to the Emperor Constantine to refute polytheism and affirm providential monotheism, as announced not only by biblical sages but also by heathen poets, philosophers, and diviners.

After reviewing the righteous insights of Orpheus, Homer, Vergil, Plato, Aristotle, Cicero, and other pagans, but before listing the ten Sibyls, Lactantius invites the reader to

> turn to divine testimonies. But first of all I shall mention one that seems divine both because of its great age and also because the person whom I shall name was transferred from humankind to the divine.... The Egyptians call him Thouth, ... and although he was human, he was very ancient and most learned in every kind of teaching.... He wrote books, many of them dealing with theological knowledge, and in them he asserts the majesty of the supreme and singular God.

Elsewhere Lactantius couples the sayings of this pious Egyptian with Sibylline predictions in order to make the case for an ancient pagan theology: he was the first to connect the Sibyls with Hermes in this way.[12]

Where his subject is Christology, Lactantius refers to a Hermetic *Perfect Discourse* that speaks in Greek about

> the master and maker of all things, whom we have judged it right to call God, since he made the second god, visible and perceptible.... Since he made this one first and only and unique, he found it a fair sight, completely full of all good things; he admired and loved it very much as his own child.

This passage is one of the few remains of the Greek text behind the *Asclepius*, which otherwise exists only in a Latin translation, probably of the later fourth century, and in a large Coptic fragment. The full context of the Latin version shows that the "second god" is the cosmos. But when Lactantius and another fourth-century Christian cite this passage, they are thinking of Christ as the Son of God. According to the modern text of the *Asclepius*,

> the master and shaper of all things, whom rightly we call God, when he made a god next after himself who can be seen and sensed, ... then, having made this god as his first production and second after himself, it seemed beautiful to him since it was entirely full of the goodness of everything, and he loved it as the progeny of his own divinity.

In his *Epitome* of the *Institutes*, Lactantius gives a different Latin rendering of part of the same text:

> The master and maker of the universe, whom we have thought to call God, made a second visible and perceptible god, ... and then since he had made this one first – only and unique – it appeared best to him and absolutely filled with all good things.

This version is very close to the Greek but not as close to the *Asclepius*. Augustine does not cite this passage, and he calls Hermes an idolater – unlike Lactantius. He also makes other selections from the *Asclepius* that are less flattering to Hermes, and his Latin quotations match the modern text. Students of the Hermetica have noted the discrepancy in order to date the *Asclepius* as it is now read – and was read by Ficino – after the *Institutes* (304–311) but before the *City of God* (413–426).[13]

Differences among the original Greco-Egyptian Hermes, the Lactantian theologian, and the Augustinian idolater were still visible to admirers of Trismegistus in the Renaissance. One of three texts on the

Figure 44. Hermes on the Floor of Siena's Cathedral, Giovanni di Stefano, 1487–9. (Art Resource)

Hermes panel in Siena is sometimes traced – incorrectly – to the first Greek discourse, the *Poimandres:* it comes from the *Perfect Discourse* and is closer to the Latin and Greek of Lactantius than to the *Asclepius* as Ficino knew it. The other two texts are not quotations from any Hermetica.

The caption at the bottom of the panel identifies the main figure as "Hermes, Mercurius Trismegistus, contemporary of Moses" – *Hermis Mercurius Trimegistus contemporaneus Moysi*. Exalting Egyptian wisdom as second only to biblical truth, this statement ignores Augustine's claim that Trismegistus belonged to the fourth generation *after* Moses. A few other words are crowded into the book that Hermes holds open with his right hand and offers to two smaller figures, not named. One is clean-shaven, hooded, and stands behind; the other is bearded, turbaned, and in front. The book tells the Egyptians to "receive letters and laws"–*suscipite o licteras et leges Egiptii*. Lactantius uses similar words – *Aegyptiis leges ac litteras*

tradidisse – when he writes about Hermes and the Sibyls, noting that the fifth of five Mercuries described by Cicero "gave the Egyptians their laws and letters." The ending of *Aegyptiis* in the passage by Lactantius is dative, but *Egiptii* on the marble is vocative, to go with the imperative *suscipite*: "receive, O Egyptians, letters and laws." The interjection *o* is oddly placed, however, among words jammed less artfully than they should be on the book's pages. Perhaps the *o* abbreviates *omnes*, giving "all the letters and laws" or maybe "all you Egyptians."[14]

Since Hermes is called a contemporary of Moses, could the hero of the Exodus be the figure closest to the god, wearing a turban and standing submissively? Trismegistus, the archetypal Egyptian, would never have addressed the commander of the Jews as his countryman, wherever Moses was born. And why would the greatest prophet be shown as one of two anonymous figures and the smaller in stature? Rather than Moses and Aaron, the two supplicants may be an Egyptian priest (hooded) receiving the sacred letters and an Egyptian ruler (turbaned) receiving the laws.

With his left hand Hermes touches a larger inscription that has been linked with the *Poimandres* but seems closer to the translation by Lactantius examined above – his Latin version of a few lines from the lost Greek ancestor of the *Asclepius*. Borne by a pair of sphinxes, the Siena inscription says that

> God, the creator of all, made a visible God to be *with Him*, and He made Him first and only; He took delight in Him and loved him greatly as His own Son, who is called the holy Word.
>
> Deus omnium creator *secum* deum fecit visibilem, et hunc fecit primum et solum quo oblectatus est et valde amavit proprium filium qui appellatur sanctum verbum.

"With Him" (*secum*) in the Siena panel, perhaps echoing "with God" (*pros ton theon*) from the first line of John's Gospel, replaces "second" (*secundum*) in Lactantius, an accurate rendering of the theologically awkward *deuteron*, describing the 'second' god – the created universe – of the *Perfect Discourse*.

The closest passage in the *Poimandres* has some language to match the Greek of the *Perfect Discourse*. But if the Siena designers knew the *Poimandres*, it was surely from Ficino's Latin *Pimander*, whose phrases are even farther than the *Asclepius* from the words on their Hermes panel:

> But intellect, father of all, being mind and brilliance, gave birth to a man like himself, and in him he delighted as if in his own son. For he

> was beautiful, and he carried his father's image. God, deep in love with his own form, in fact, actually allotted all his works to this human's use.
>
> At pater omnium intellectus, vita et fulgor existens, hominem sibi similem procreavit, atque ei tanquam filio suo congratulatus est. Pulcher enim erat, patrisque sui ferebat imaginem. Deus enim, re vera propria forma nimirum delectatus, opera eius omnia usui concessit humano.

Other parts of the Greek Corpus are more distant yet.[15]

After this selection from the *Perfect Discourse*, Lactantius cites two passages from his favorite Sibyl, the Erythraean, and one from "another Sibyl" who turns out to be the Delphic prophetess, stationed to the left of Hermes in Siena. That panel's caption says that Chrysippus mentioned her "in his book on divination." This bit of erudition comes from Lactantius, who supplies almost all the ancient evidence used in the Sibyl panels. He also records most of the prophecies uttered by the Sibyls. On one side of Hermes, the Delphic Sibyl urges the faithful to "recognize that your God is himself the Son of God," words cited by Lactantius to prove that the one God actually conceived a Son. On the other side of the Egyptian, the black Sibyl of Libya predicts Christ's suffering, especially his submission to torments by the unjust – proof for Lactantius that pre-Christian prophets had foretold the passion, despite the repugnance of those events to Greco-Roman pagans.[16]

Less offensive to non-Christians in late antiquity was the idea of a supreme God begetting a divine Son, as shown by references to similar notions in the Hermetica. Proclaiming that message and preparing the way for the Gospel was the task of Hermes in Siena. That the framework of the cathedral's art and architecture is the ancient wisdom accepted and sanctified by Lactantius is overwhelmingly clear from the Marian, Sibylline, and other images that cover the facade and floor. That program, as Lactantius presents it, advocates an irenic ancient theology. But the Sienese authorities cannot have been blind to Augustine's enormous authority – the teachings of a great saint who was not so fond of the Sibyls and hated Hermes. When they made a pious Hermes conspicuous among ancient sages who foresaw wonders predicted by the Bible, the Sienese took sides in an old theological debate.[17]

As early as the second century, Christians disagreed about Hermetic and Sibylline wisdom. Theophilus of Antioch often cites the Sibyls, Clement of Alexandria finds them helpful, but Tertullian disagrees and Arnobius preaches against such followers of Hermes and Plato. Augustine lumps the Sibyls with Hermes, Orpheus, and other unreliable Gentile seers

in his polemic *Against Faustus*, although he names the Erythraean Sibyl with "those who belong to the City of God" in that more famous work. Tertullian takes testimony from Hermes on the individuality of the soul, and Cyril of Alexandria draws trinitarian conclusions from Hermetic premisses. Cyril wants it both ways, however: "this Hermes of Egypt," he writes, "although he was a theurgist, ever sitting in the temple precincts near the idols, had the good sense to acquire the writings of Moses, even if he did not use them at all blamelessly or correctly, having but a part of them."[18]

Augustine was less forgiving. Although he grants that Hermes "says many things that are true about the one God, maker of the world," he still puts him with the wise fools criticized by Saint Paul. At much greater length, he condemns Hermes for being "friendly to the tricks of demons" even while predicting the fall of Egyptian demonolatry before the irresistible power of the new faith. Hermes was perverse because he mourned the collapse of the old religion after calling it a fraud. To back up his attacks, Augustine quotes the god-making passages of the *Asclepius*. Because Augustine was so well known, many more Christians saw those passages as excerpts – bits of Augustine's propaganda – rather than as statements made in context by a Hermetic author, much less as parts of a comprehensive Hermetic literature, whose Greek components were unavailable to Western readers until Ficino translated them.[19]

The contrast with the treatment of Hermes by Lactantius could not be plainer. In the *Institutes*, Hermes is the prophet of a providential Creator who begot a divine son and made mankind in his divine image. This Hermes praises God for a creativity so powerful and absolute that he is his own father and his own mother, breaking the boundaries of gender. Hermes extols God for a will so mighty that he and the Word that he generates both exceed all human naming. Man's form is godlike, though his mortal powers of knowing come nowhere near divinity. Mortals must adore the creative Word, but their worship is to be a pure speech offering, uncontaminated by matter. Their duty is to contemplate a God who cannot be fully known by the faculties of a human nature that is partly mortal, partly immortal.[20]

Much is at stake, for Hermes promises that the Son of God will come to destroy the wicked and save the reverent. The pious who have tried to know God will escape fate and the demons – the wicked angels who harass humanity under the Devil's rule. But those who persist in error will suffer greatly from the turmoil at the end of time, and "before all others Egypt will pay the price of her stupid superstitions and be covered

by a river of blood." For this denunciation of Egypt, Lactantius paraphrases the apocalypse preserved by the *Asclepius*, and unlike Augustine he knows the prophecy in Greek. Augustine takes Hermes to be mourning the decay of a spent religion that had to die, but Lactantius, quoting a sizable section of the *Perfect Discourse*, represents Hermes as an honest broker of Egyptian misfortune. Joining the Sibyls rather than other seers deceived and controlled by demons, Hermes does not try to hide the fact of impending judgment by Christ. He predicts a great restoration (*apokatastasis*) when the Lord will come with fire and water, war and plague to cleanse the world of evil.[21]

Taken by itself, the corresponding passage of the *Asclepius* might well be read as an oracle of Christian judgment. But the context shows that the evil lamented by Hermes was the failure of native Egyptian polytheism. "How mournful when the gods withdraw from mankind," he wails, having started his apocalypse with praise for mortals addressed to his disciple, Asclepius: humans, cousins of the gods, are admirable because they fashion gods of their own to emulate the original productions of the immortals. "Are you talking about statues," asks Asclepius, and Hermes answers:

> Statues, Asclepius, yes.... I mean statues ensouled and conscious, filled with spirit and doing great deeds, statues that foreknow the future and predict it by lots, by prophecy, by dreams, ... statues that make people ill and cure them, bringing them pain and pleasure as each deserves.

Later, after describing the apocalypse, Hermes returns to the theme of human grandeur:

> It exceeds the wonderment of all wonders that humans have been able to discover the divine nature and how to make it. Our ancestors once ... were unbelieving and inattentive to worship, ... but then they discovered the art of making gods.... They called up the souls of demons or angels and implanted them in likenesses through holy and divine mysteries, whence the idols could have the power to do good and evil.... Those gods are entertained with constant sacrifices, with hymns, praises and sweet sounds in tune with heaven's harmony, so that the heavenly ingredient enticed into the idol ... may gladly endure its long stay among mankind. Thus does man fashion his gods.

As long as mortals honor the gods, Egypt is heaven on earth, but neglect of worship brings on the world's decay and Egypt's ruin. Although apocalyptic grief shook Egypt across the millennia from the days of the old pharaohs, by the time Lactantius, Augustine, and other early Christians

read the Hermetica, the main cause of religious distress for native Egyptians was Christianity itself. If Lactantius had a Greek text with the same content that enraged Augustine in Latin, the argument that he makes in the *Institutes* can only be a polite evasion of the hard facts about an idolatrous Hermes. Having both the *City of God* and the *Institutes*, later readers could see the stark contrast between them, reflecting the different textual resources of the two authors. Caring more about piety than culture, perhaps Augustine meant his attack on Hermes as a rebuke to his learned predecessor.[22]

4 PIMANDER

Marsilio Ficino muffles the conflict between the Fathers in his study *Of the Christian Religion*, where he leans toward Lactantius. He records the Sibylline prophecies from Lactantius and Vergil at length, for example, while alluding only briefly to Augustine's favorable treatment of the celebrated acrostic in which the Erythraean Sibyl names Jesus Christ as Son of God and Savior:

ΙΧΘΥΣ

Ἴ**ι**σουῦς **Χ**ρειστός **Θ**εοῦ **Υ**ἱός **Σ**ωτήρ

Iêsous **CH**reistos **Th**eou h**U**ios **S**ôtêr

Jesus **Ch**rist of-**G**od **S**on **S**avior

The first letters of the five Greek words spell 'fish' (*ichthus*) as code: twenty-seven letters in all are the trinitarian product of three threes. Ficino thinks that the Sibylline books made such mysteries known to Vergil, whose friendship with Augustine gave him special access to them – just as Lactantius saw the Sibylline books because of his similar connection with Constantine. People so learned and powerful were not fooled. The Sibyls truly predicted "the resurrection of the body, the transformation of time, God's coming in judgment and mankind's eternal reward and punishment. They also read such things in Mercurius Trismegistus," Ficino adds, noting that Plato too had foreseen a holier truth that would supersede his own wisdom.

Like Lactantius, Ficino ranks Hermes with Plato and the Sibyls in his apologetic treatise of 1474, which simply disregards Augustine's coolness to the Sibyls and his loathing of Hermes. Eleven years earlier, he had faced the friction between the Fathers more openly at the start of the letter to Cosimo that prefaces the *Pimander*. That letter, translated here in

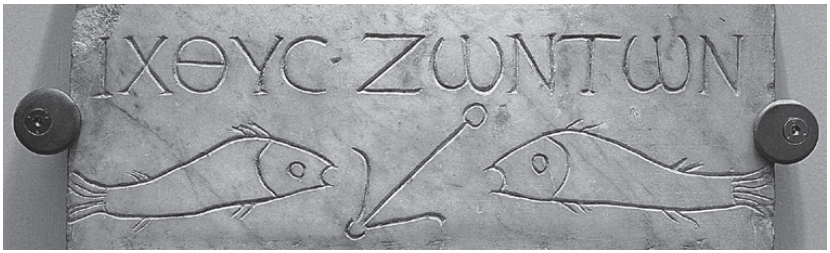


Figure 45. "Fish of the Living," from the Stele of Licinia Amias, Early Third Century. (Art Resource, from the Museo Nazionale Romano, Terme 67646)

full, is Ficino's only extensive comment on the Greek discourses – or any part of the Hermetic Corpus.[23]

The letter opens with some chronology from Augustine but moves on quickly to Lactantius and Cicero:

> (1) Atlas the astrologer, brother of the natural philosopher Prometheus, flourished at the time when Moses was born, and he was the maternal grandfather of the elder Mercury whose nephew was Mercurius Trismegistus. This is what Aurelius Augustine writes about him, though Cicero and Lactantius think that five Mercuries came in succession and that he was the fifth, the one called *Theut* by the Egyptians, *Trismegistos* by the Greeks.
>
> (2) They claim that he killed Argus, that he led the Egyptians and that he gave them laws and letters, but that they formed their letters in the shapes of animals and plants. Humans honored him so much that they made him one of the gods, and many temples were built for this deity. Out of a feeling of reverence, it was not permitted to utter his proper name lightly and in public, though in Egypt the first month was named after him and he founded a town whose Greek name even now is Hermopolis – Mercury City.[24]
>
> (3) In fact, he was called Trismegistus or 'thrice-greatest' because he excelled as the greatest philosopher, the greatest priest, and the greatest king. For in Egypt it was customary, as Plato writes, to choose priests from the ranks of philosophers, a king from the body of priests. Just so, when he had surpassed all the philosophers in brilliance and learning, he was next made a priest, and when he outdid all the priests in holiness of life and reverence for divinity, he then attained royal rank, obscuring the glory of mightier kings by his exploits and administration of law, so that it was right to name him 'thrice-greatest.'[25]

(4) He was the first among philosophers to turn from natural philosophy and mathematics to meditate on divinity. He was the first to dispute with utmost wisdom about the majesty of God, the order of demons and the changes of souls. Accordingly, he first was called the founder of theology, followed by Orpheus, who took second place in the ancient theology. Aglaophemus was initiated into the rites of Orpheus, and Pythagoras was his successor in theology, followed by Philolaus, teacher of our divine Plato. In this way, from a wondrous line of six theologians emerged a single system of ancient theology, harmonious in every part, which traced its origins to Mercury and reached absolute perfection with the divine Plato.[26]

(5) Mercury wrote many books dealing with knowledge of divinity in which – as God eternal knows – he discloses mysteries so arcane and oracles so astounding that one often speaks of him not only as a philosopher but also as a prophet. He tells the future: he foresees the ruin of the old religion, the rise of the new faith, the coming of Christ, the judgment to come, the resurrection of the race, the glory of the blessed, and the torments of sinners. So it was that Aurelius Augustine wondered whether much that he anticipated came from his skill in astrology or from revelation by demons. But Lactantius has no doubt about counting him among Sibyls and prophets.[27]

(6) Of Mercury's many books, then, two especially are divine, one on the divine will, the other on God's power and wisdom – the former entitled *Asclepius*, the latter *Pimander*. Apuleius the Platonist translated the first into Latin, but until now the second has been left to the Greeks. Recently, however, conveyed to Italy from Macedonia by the diligent Leonard of Pistoia, a learned and upright monk, it came to us. And I, prompted by your urgings, undertook to turn it from the Greek tongue into Latin.

(7) I have thought it appropriate to dedicate this little work to your name, happy Cosimo, for it is fitting that I should offer the first fruits of my Greek studies to him whose wealth aided me, whose books fed me full when I was busy studying Greek. It would not be right to present the work of so wise a philosopher, so pious a priest, so powerful a king, except to a recipient who himself leads all others in piety, wisdom and power.[28]

(8) Now, as we move on to Mercury's writings, the title of this book is *Pimander* because Pimander's turn comes first among the four persons who dispute in the dialogue. Mercury actually produced the

book in Egyptian, and then, equally skilled in the Greek tongue, he communicated the mysteries of the Egyptians to the Greeks by translating it.[29]

(9) The purpose of the work is to discuss the power and wisdom of God. And because these are twin activities, the first of them stays within God's very nature, while the second reaches to things farthest away. Power conceives a world as first and eternal; wisdom gives birth to a second, temporal world. He raises the weightiest questions having to do with both activities and with either world. What is God's power? His wisdom? By what order do they conceive inside themselves? By what movement do they give birth outside? Further, how are their products related to one another? How do they agree? How do they differ? And how finally do they reconnect with their author?

(10) The book is organized so that we divide it into fourteen sections. The first part in the dialogue goes to Pimander; Trismegistus gets the second; Esculapius the third; Tat has fourth place. Mercury aims to educate Esculapius and Tat about divinity, which no one can teach who has not been taught. Things that are beyond nature we cannot discover by human insight, so one needs a divine light, as we see the Sun itself by sunlight. But the light of divine Mind never floods the soul unless the soul herself turns entirely toward God's Mind, as the Moon to the Sun, nor does Soul turn toward Mind unless Mind is also with her.[30]

(11) But Mind is not there until the soul has shed the deceptions of the senses and the clouds of imagination. For this reason, Mercury quickly disperses the mists of sense and imagination. He recalls himself for the coming of Mind. Then Pimander – Divine Mind, in other words – flows into him, and thence he looks on the order of all things existing within God and streaming out of God. Finally, he explains to the rest of mankind what divine power has revealed thereby.[31]

(12) Hence the book's title, purpose and organization. Read it happily, happy Cosimo, and live long so that our fatherland too may live long.

For students of magic, the key features of the letter are its silence on that topic and its proclamation of a Hermetic theology. Praising Hermes because he foresaw "the ruin of the old religion" (¶ 5), Ficino alludes to a part of the *Asclepius* that describes god-making, but the letter never actually mentions that practice. He names the *Asclepius* only once (¶ 6) and says that its topic is theological –"the divine will"– nothing to do with magic.[32]

Hermes is triply great as philosopher, priest, and king (¶ 3). Ficino's preface to his rediscovered writings does not call him a magus and gives the reader no cause to do so. On the contrary: Hermes turned to theology and abandoned natural philosophy – of which natural magic is a part, according to Ficino and his followers. The Egyptian is an expert on astrology, but so is Atlas, and astrology by itself is not magic (¶ 1). Like Lactantius, Ficino also sees Hermes as an authority on "the order of demons" (¶ 4), which is also true of Saint Paul and many fathers and doctors of the church. That demons exist is Christian dogma: demonology is not demonolatry, no more than angelology is angel-magic. More important: neither demonology nor demonolatry is the natural magic that Ficino will advocate in his *Three Books on Life*.[33]

Ficino notes Augustine's charge that Hermes got his foresight from demons, but he quickly counters it with the confident claim of Lactantius that Hermes shared his vatic powers with Sibyls and holy prophets (¶ 5). In fact, except for the flattery of Cosimo (¶ 7, 12) and the material on Platonism (¶ 3–4, 6) and the new Greek discourses (¶ 6, 8–10), the themes of the letter are Lactantian – decidedly so after the opening disagreement about chronology. The Hermes of this letter could stand sinless in the Virgin's church in Siena, unprofaned by "sitting in the temple precincts near the idols." Mercurius deserves respect as a philosopher and a prophet (¶ 5), as Lactantius said, for his "many books dealing with knowledge of divinity."[34]

In ways obscure to Ficino, saving knowledge (*gnôsis*) of the deity is indeed the message of the Hermetic Corpus. Its authors were Greco-Egyptian competitors of Christians whose new covenant killed Egypt's old religion in later Roman times, not contemporaries of the Jews whom Moses had brought out of Egypt to carry an older covenant into Canaan. Eventually, Ficino had hints of the more recent struggles in Egypt from such sources as the polemics of Plotinus against the Gnostics, but in general he misunderstands and misdates the relation of the Hermetica to Christianity which, like Lactantius, he takes to be both predictive and supportive. Misunderstood or not, the theology and spirituality shared by early Christians and Hermetists made it inevitable that Ficino would find Hermes helpful to his own syncretist thinking.[35]

5 WILL, WISDOM, AND POWER

Ficino believes (¶ 6) that the *Pimander* proclaims God's "power and wisdom" and that "the divine will" is the topic of the *Asclepius*. He takes

both works to be about philosophical theology – in the core sense of 'theology,' the science of God. This reading of the *Asclepius* is odd, not because will, counsel (*voluntas*), and related ideas are lacking in that work but because so many other issues besides God and God's faculties and properties – man, cosmos, nature, form, matter, perception, reason, revelation, reverence, and others – get as much attention or more from that notoriously diffuse treatise. Moreover, 'counsel' (*boulê*), 'will' (*thelêma*), and related terms are at least as important in the Greek discourses that Ficino groups under the title *Pimander*. In the first discourse, for example,

> the elements of nature … arise from the *counsel* (*boulês*) of God which, having taken in the word and having seen the beautiful cosmos, imitated it.… The Mind who is God, being androgyne and existing as life and light, by speaking gave birth to a second Mind, a craftsman.[36]

"The counsel of God" can also be 'the will of God,' and the phrase in the *Poimandres* is the first such expression known in Greek outside the Septuagint. This and other theological treasures in the *Poimandres* clearly excited Ficino: the *Chaldaean Oracles* also feature a hypostasized 'counsel' (*boulê*) and – save for the embarrassment of an androgyne deity – the rest of the passage recalls the words of the *Perfect Discourse* preserved by Lactantius and displayed by Hermes in Siena.[37]

Ficino's Latin, as usual, treats a difficult text fairly:

> Elementa naturae … manarunt … ex *voluntate* Dei, quae, verbum complexa pulchrumque intuita mundum, ad eius exemplar reliqua … exornavit. Mens autem deus, utriusque sexus fecunditate plenissimus, vita et lux, cum verbo suo mentem alteram opificem peperit.

The 'will of God' (*voluntas Dei*) is important here and elsewhere in the *Pimander*, but it is also prominent toward the end of the apocalypse in the *Asclepius*, where Hermes describes nature as eternal, though reordered in the cleansing destruction by a divine will that is also eternal.

> God wills (*vult*) nothing in excess since he is completely full of all good things and wills (*vult*) what he has. He wills (*vult*) all that is good, and he has all that he wills (*vult*).… Such is god, and the world is his image – good from good.… Just as god dispenses and distributes his bounty – consciousness, soul, and life – to all forms and kinds in the world, so the world grants and supplies all that mortals deem good.[38]

Potestas – the word that Ficino uses for God's power in the *Pimander* letter – is rare in the *Asclepius*, unlike *voluntas*. This power word occurs only twice and applies to humans and demons rather than God. *Potentia*,

also 'power,' is missing altogether, like 'wisdom' (*sapientia*). On this crude lexical basis, then, Ficino could see where the Latin vocabulary of the *Asclepius* overlaps – or not – with the language of the Greek discourses. In all likelihood, however, he was thinking along subtler trinitarian lines about the diction of thrice-great Hermes, tracing patterns that go deeper than terminology.[39]

'Power' is amply represented in the Greek treatises by *dunamis* and its cognates, which appear over a hundred times in the discourses known to Ficino: the first uses *dunamis* ten times, the thirteenth twice as often. When Poimandres finishes his revelation, he unites with the divine powers (*dunamesin*; *potestatum* in Ficino's version) to act out the account he has just given of the soul's ascent. Souls rise up "among the powers (*dunameis; potestatum*)," writes Ficino, "and having been made into powers (*dunameis; potestates*), they enjoy God's company. For those whose lot it is to know, this is the greatest good, to be made God."[40]

After Poimandres has described the powers in their heights above the Eighth Heaven, they reappear in a final prayer, loud triplets of praise echoing the triple blessing of the Mass in Ficino's Latin:

> Sanctus deus pater omnium.
> Sanctus deus cuius *voluntas* (*boulê*) a propriis *potestatibus* (*dunameôn*) adimpletur.
> Sanctus deus qui suis familiaribus innotescit.

> Holy is God, the father of all.
> Holy is God, whose *counsel* is done by his own *powers*.
> Holy is God who is known by his own people.

With "the will of God fulfilled by His own powers," as Ficino puts it, the first discourse highlights two of the three divine perfections emphasized by Ficino's prefatory letter (¶ 9).[41]

But the feminine *sophia* and its relatives – the most obvious choices for 'wisdom' and theologically rich words for Jews, Gnostics, and Christians – appear only nine times in the first fourteen discourses, only once in the *Poimandres* itself, where, after instruction by Poimandres, the narrator preaches a sermon on salvation, boasting that he has "sowed words of wisdom." Later, in the eleventh discourse, when Mind tells Hermes that wisdom is part of God's essence, Hermes presses the question and asks Mind to explain the divine wisdom. He learns that it is vast and manifold –

> the good and the beautiful and happiness and all excellence and eternity. Eternity establishes an order, putting immortality and permanence into matter. The becoming of that matter depends from eternity.... And god is the soul of eternity.... God is in mind, but mind is in soul, and soul is in matter, yet these all exist through eternity. Inwardly, a soul full of mind and god fills this universal body in which all bodies exist, but outwardly soul surrounds the universe and brings it to life. Outwardly, the universe is this great and perfect living thing, the cosmos; inwardly it is all living things.[42]

In a brisk but equally cryptic exchange near the opening of *Discourse* 13, Tat asks Hermes "what sort of womb (*mêtras*) mankind was born from."

> My child, it is the *wisdom* (*sophia; sapientia*) of understanding in silence, and the seed is the true good.
>
> Who sows the seed, father? I am entirely at a loss.
>
> The *will* (*thelêmatos; voluntate*) of God, my child.
>
> And whence comes the begotten, father? He does not share in my essence.
>
> The begotten will be of a different kind, a god and a child of God, the all in all, composed entirely of the *powers* (*dunameôn; potestatibus*).[43]

The authors of these passages from *Discourses* 1, 11, and 13 may be thinking not only about the Wisdom (*Hokmah*) of Hellenistic Judaism, with its hints of female divinity, but also about Gnostic speculations – where God as woman is more visible – on the womb of silence. Ficino, who eventually encountered the same notions in the *Chaldaean Oracles*, softened them a little by choosing 'mother' (unless both *mater* and *materia* are bad readings) rather than 'uterus' (*uterus, matrix*) for *mêtra*. But his *Pimander* letter (¶ 9) at least broaches the topic of sexual theology by describing God's power as inwardly conceiving a first eternal world, his wisdom as giving birth outwardly to a second temporal world.[44]

These three texts gave Ficino the view of divine wisdom expressed by the *Pimander* letter, but they do not explain why he called wisdom one of the two main topics of the Greek discourses. Actually, he connects wisdom not only with power, the first of God's "twin activities" named in the *Pimander* letter (¶ 9), but also with will as the subject of the *Asclepius*. Works earlier than the *Pimander* in which Ficino appeals to Hermetic authority illuminate this grouping of power, wisdom, and will.

He certainly knew the *Asclepius* by May 1456, when he copied its conclusion along with passages from Lactantius, Cicero, and Augustine that provide historical and apologetic material for the *Pimander* letter (¶ 1). In

1457 he closed the first chapter of his work *On Pleasure* with the prayer that ends the *Asclepius*. *On Pleasure* cites (and thus follows) another early work, *On Divine Frenzy*, that calls Hermes "the wisest of all Egyptians." Their god is the luminous source that blazes forth the Ideas, the models from which all things are copied.

Similar language in another early treatise, the vernacular study *Of God and the Soul*, describes God's "wisdom as like a huge mirror in which the likenesses of all things shine" so that "the models of all things remain eternally in the divine wisdom." Ficino attributes these views to Mercurius Trismegistus, an Egyptian philosopher far older than the Greeks whom they and the Egyptians called a god because of his boundless understanding and knowledge, surpassing any human talent. Mercurius finds three properties in the divine substance: power, wisdom, and goodness (*bonità*). Like Christian theologians, he calls the Father 'Power,' the Son 'Wisdom,' and the Holy Spirit 'Goodness.'[45]

Ficino links this triad with Mercury in yet another early work, *In Praise of Philosophy*, that traces the ancient theology back from Plato, Heraclitus, Pythagoras, and other Greeks to unnamed "Egyptians and Arabs" and then forward to Hilary, Augustine, and Dionysius the Areopagite. In the twelfth century, Thierry of Chartres had already connected Hermes with the last three Christian authorities. Another Platonist of that period, William of Conches, wrote a *Timaeus* commentary that represents God's essence, wisdom, and goodness as efficient, formal, and final causality, describing the Creator as holding all things in his mind – a Platonic 'archetypal world'– before making them.[46]

The trinitarian speculations of these Christian Platonists surely influenced Ficino, whose picture of Hermes resembles theirs. In fact, he wrote his longest analysis of any Hermetic text to explicate a favorite book of those medieval theologians. *Of God and the Soul* comments extensively on the twelfth-century *Book of Propositions or Rules of Theology, Said to Be by the Philosopher Termegistus* – also known as the *Book of Twenty-Four Philosophers*. Since Ficino gives ten interpretations of the book's most memorable maxim –"God is an infinite sphere, whose center is everywhere, whose circumference is nowhere"– he probably also knew the twelfth proposition, where the trinity of power, wisdom, and goodness appears in altered form, with 'will' (*voluntas*) replacing 'goodness' (*bonitas*): "there is a God whose will is equal to deific power and wisdom." The *Asclepius*, whose final prayer Ficino cites in his books *Of God and the Soul* and *On Pleasure*, links divine 'counsel' (*voluntas)* with 'goodness'

or 'kindness' (*bonitas* or *benignitas*) in several places, giving Ficino another reason to treat those notions as closely related.[47]

The twelfth-century Platonic revival provoked curiosity about Hermes and the *Asclepius* – especially as background for the *Timaeus*. William of Conches, Thierry of Chartres, Bernardus Silvestris, John of Salisbury, and others went directly to the *Asclepius* for theological inspiration, ignoring Augustine's ban on Hermes and preparing the way for continued interest from Aquinas, Albertus, and especially Thomas Bradwardine. But Bradwardine and the others were not the first to find the Trinity in the Hermetica. When Lactantius interpreted the *Perfect Discourse*, he took his Christology from Hermes and the Sibyls and also from Plato, claiming Academic authority for an ancient trinitarian theology:

> In the beginning, before God established the world, he begot a Son for himself from the fount of his eternity and from his divine and enduring spirit.... He is power (*virtus*), reason, the word of God, and wisdom (*sapientia*). With this Workman and Counselor, as Hermes and the Sibyl say, God devised the shining, miraculous fabric of this world. Then, of all the angels whom the same God formed from his breath, he alone was taken into the company of the supreme power (*potestatis*), and he alone was called God.... Clearly, then, Plato spoke about a first and a second God not as philosopher but as seer, in this perhaps following Trismegistus, whose words I have translated from Greek.

What Lactantius translated would eventually find its way to Siena.[48]

Meanwhile, in fifth-century Carthage, the deacon Quodvultdeus used this same fragment of the *Perfect Discourse* to show how the divine Father and Son were related as will and wisdom. In Alexandria, the shrill Cyril called Hermes a theurgist but also quoted him on a Trinity of Mind, Son, and Spirit and made frequent use of the Hermetic *Logos* doctrine in a trinitarian framework. Six centuries later, the *Suda* would claim that Hermes was named Trismegistus because of "his praise of the Trinity."[49]

Like Cyril, Michael Psellus condemned Hermes as a wizard but credited him with knowledge of scripture. Psellus was thinking of the *Poimandres*, where the command to "increase ... and multiply" exactly mirrors the Septuagint Genesis. If Ficino saw the connection, he made no effort with the Latin words that he chose – *pululate, adolescite, propagate* – to reflect the Vulgate's *crescite et multiplicamini*.[50]

Elsewhere he is sharper or bolder, alluding to the Latin Bible to suggest that the divine Wisdom, as *Logos*, joined the other two persons of the Trinity in the act of creation. A particularly corrupt part of the first

discourse recounts a vision where a holy Word (*verbum sanctum, logos hagios*) comes from the voice of Light to warm the water from which air, spirit, and fire rise above the mix of damp and dirt.

> They lay commingled with one another so that the face of the land (*terrae facies*) was covered by the waters (*aquis obruta*) and was nowhere exposed (*nusquam pateret*). Then these two were stirred by a Spiritual Word that moved upon them (*eis superferebatur*).

Ficino's Latin is both reminiscent of the Vulgate Genesis and also fair to the Greek of the first Hermetic discourse. The land there has no "face" (*facies*), but in Genesis the abyss and the land both have faces. The Greek behind "exposed" is a transitive verb (*theôreô*), implying an observer who cannot yet tell earth from water, but Ficino chooses the intransitive *pateo* (perhaps avoiding a theological problem) and adds the spatial "nowhere" *nusquam* in place of the abstract Greek negation (*mê*). The strongest coincidence of Hermetic with biblical language is "moved upon" (*epipheromenon, superferebatur*) said of the Spirit, which Ficino did not need to invent since the Septuagint's terminology (*epephereto*) mirrors the Vulgate (*ferebatur super*) as well as the *Poimandres*.[51]

6 ANDROGYNOUS DIVINITY

If there were any doubt that the Father and Son are Light and the Word, the wise Pimander dispels it by interpreting the vision of the first discourse: "I am that Light, Mind, your God, older than the watery nature that appeared from the darkness. But the lightgiving Word, the scion of Mind, is the Son of God." In the next stage of ecstasy, the visionary sees a "light with numberless powers (*viribus; dunamesin*), a cosmic beauty without end, a fire enclosed by a great force (*vi; dunamei*)." In Ficino's *Pimander* letter (¶ 9), this dream of boundless light and power surveys the eternal world that God's power first conceives.[52]

Then God's will produces nature and the elements – the second, temporal world of the *Pimander* letter (¶ 9) – but only by embracing the Word, gazing on primal beauty, and taking it as the model for a secondary, elemental creation. Divine Mind, once again energized by primordial Life and Light, "brought to birth (*peperit; apekuêse*) with his Word a second Mind, a craftsman." The verb 'bring to birth' (*pario*), suggesting parturition by a woman as well as creation by a deity, renders *apokueô*, whose range is more narrowly biological. Ficino also uses *pario* in the *Pimander* letter for Wisdom's creative activity (¶ 9), identified by the text of the

Pimander with the action of will through the Word, whose effects are secondary, temporal, and external because they reach outside the divine light to nature.[53]

The God of the *Asclepius*, "completely full of the fertility of both sexes and ever pregnant with his own counsel (*voluntatis*), always begets whatever he wishes to procreate." Faced with the *Pimander*'s androgynous god, Ficino goes to this *Asclepius* passage for a phrase –"completely full of the fertility of both sexes"– to sanitize the single word 'androgynous' (*arrenothêlus*) by circumlocution, bypassing simpler Latin alternatives (*hermaphroditus, androgynus*) and profiting not just from the pleonasm but also from an explicit mention of the divine "counsel" or 'will.' The same text helps with other delicate phrases a little further along in the vision: "Mind, father of all, existing as life and brightness, brought forth (*procreavit; apekuêsen*) a man like himself, and he delighted in him as his own son."[54]

Without reference to magic – Hermetic or otherwise – there was much in the Greek Hermetica to delight Ficino, much to perplex him, and much to persuade him that the *Pimander* and *Asclepius* are parts of a pagan gospel that preaches a triune God of power, wisdom, and will. As he writes in his book *On the Christian Religion*, "Mercurius Trismegistus often mentions the Word and Son of God and the Spirit also." He saw such ideas everywhere in the Hermetic *Logos* theology, just one theme of the Greek discourses that encouraged his Christian Platonism. The Demiurge begotten by Mind in the first discourse recalls not only the Craftsman of the *Timaeus* but also the 'second Mind' of the *Chaldaean Oracles* and contradictory demiurgic doctrine in other Hermetic texts. The repeated expression "life and light," a phrase (cf. ¶ 10) colored by the same motif in the *Asclepius*, brings to mind the Christology of John's Gospel.[55]

Was it enlightening or shocking or both to find such material inside a myth of sexual theogony? When the primal Man begotten by Mind descends to the bottom of the cosmos, he arouses Nature's passions and she makes love to him. Ficino does not evade the issue – this is an eager Nature who "wrapped herself all around him and had sex." On the other hand, the *Pimander* letter does not state explicitly that Hermes had foreseen the Christian Trinity.[56]

A pregnant, bisexual God is just one doctrinal trap in the Hermetica, where the various manifestations of divinity (One, Mind, Word, Craftsman) would trouble even the most tolerant Christian. Just the terminology of power, wisdom, and will – Hermetic authority aside – had

been enough to excite a heresy scare in the twelfth century, even though Augustine had theorized in the same pattern about power, wisdom, and love. But Ficino was not afraid to use this triad to introduce the *Pimander* or, later, to refute Lucretius in the *Platonic Theology*:

> The world does not move of its own, without life, nor does it turn so long or so regularly without the most powerful (*potentissima*) life, nor in such good order without the wisest (*sapientissima*) mind, nor in so excellent and agreeable a manner without the supreme good (*summo bono*). But some unitary life, queen (*regina*) of the world's one body, pre-eminent power, wisdom and goodness, continuously and from the beginning leads the world to its best end. This (*haec*) is the supreme God – or rather the supreme God's handmaiden (*pedissequa*).

Ficino takes back his announcement of a queenly Godhead as soon as makes it, but the triad of attributes that dismayed the theologians does not embarrass him. He returns to it even in his late and cautious commentary on Romans. Whatever Ficino knew about earlier controversies on power, wisdom, and will, there were plenty of other vices in his new Greek Hermetica – pantheism, polytheism, determinism, and a dark metaphysical pessimism – to test his hermeneutic patience as he found compensating theological virtues: conceptions of faith, penance and rebirth; an account of baptism; a deep yearning for salvation; constant praise of piety; numerous echoes of holy scripture; and other comforts to warm a Christian heart.[57]

His understanding of these enticing but erratic texts shows no discontinuity and little development between the juvenilia and notebooks of the 1450s and the *Pimander* in 1463. He found the makings of his title for that project – *A Book on the Power and Wisdom of God* – in the *Institutes* of Lactantius, the *Asclepius*, the *Book of Twenty-Four Philosophers*, and other products of the twelfth-century Platonic revival, not to speak of the fourteen Greek discourses themselves. When he translated them in 1463, his view of Hermes as a theologian was already grounded in the Hermetism of the Middle Ages and the Latin Fathers. As he learned more about Plato, the Neoplatonists and Chaldaean and Orphic sages, his perspective would mature and so would his attitude toward Hermes. But nothing indicates that Ficino ever stopped thinking of the Egyptian god as a theologian.

Throughout his writings, mostly later than the *Pimander*, Ficino mentions Hermes in dozens of places, usually to place him in a doxography or genealogy, sometimes to quote a Hermetic text, more often to claim

some looser validation. When he lists him with the ancient theologians, the grouping usually revolves around Plato, and the overriding interest is to find forerunners and supporters for the Academy, as Lactantius had done. When all the facts are gathered and sorted, the Trismegistus who emerges is the Hermes of the Greek discourses and the *Asclepius*, who is a theologian, not a magus.[58]

Even if 'theology' is taken restrictively, to name just the science of God's existence, attributes, and actions, Ficino cites Hermes more often on theological topics than any other. Magic accounts for few references – very few if one omits the medieval Hermetica and the theurgy in the *Asclepius*. The pattern is predictable, reflecting the contents of the *Pimander* and the *Asclepius*, which never mention the word 'magic.' Hermes – under any name – seldom contributes to Ficino's broader discussions of magic. Although demons, which are by no means ubiquitous in the Hermetic literature, sometimes come up where Hermes is cited, neither demonology nor angelology is a Hermetic theme, except in the sixteenth discourse that Ficino did not translate. In the fourteen Hermetica that he Latinized, the issues are theology, cosmogony, cosmology, anthropology, psychology, ethics, soteriology, and eschatology.[59]

Hermetic demons worried Ficino, but they did not obsess him. He takes more notice of Hermetic doctrine on God, man, and the soul. In the *Pimander*, demons play several roles, none magical and none indispensable: they tempt the wayward, judge the dead, punish the guilty, and reward the just. They preside, sometimes with menace, at the gates of the spheres through which souls ascend to salvation. Their disposition –"the order of demons"– in the sublunar and supralunar worlds fits their status, higher than animals and men but lower than gods. Their jurisdiction is the bodily side of human life, and part of man's glory is his kinship with them. Demons do both evil and good, if anything non-divine can be called good.[60]

Much of this fits the outlines of Christian demonology and angelology, and Ficino capitalizes on the agreement. He cites Hermes for proof that demons have a role in punishing the wicked, certainly an orthodox belief. He also treats Hermes himself as a "demonic" being – meaning 'powerful' or 'godlike' but not necessarily more than human: a demonic person like Socrates is empowered numinously to help other mortals. Man is a wonder, as the *Asclepius* teaches, in part because he has powers like those of demons.[61]

The only real problem – a serious one – was the *Asclepius* and its demonic statues. Three of Ficino's briefer mentions of the statues are safe

enough. Like mechanical doves and other automata, talking statues prove human ingenuity, whatever their moral status. Comparing a demon's dwelling in a statue to a soul's inhabiting a body makes a harmless point about metaphysical psychology. And the demonic power in the statues is like the magic in certain spoken words, especially the Tetragrammaton, the holiest name of God.[62]

Although invoking the divine name suggests a positive view of the statues, there is nothing good about them in *De vita* 3.13: "Trismegistus says that the Egyptians used to make images from specific cosmic materials and at the right moment put the souls of demons into them." Doing theurgy by having a demon animate a statue is a sin. But the last chapter of *De vita* is ambivalent on this crucial point, even though Iamblichus condemned the Egyptians when he praised the Magi for their devout worship – just as Ficino himself, commenting on Romans, sees the Magi as less culpable than Egyptian wizards. This late work treats ancient cult as superstitious and fraudulent, briefly introducing Hermes to report that demons and dead souls were enticed into Egyptian idols.[63]

Taken together, the Romans commentary and *De vita 3* suggest, but do not declare, that Hermetic god-making was at best morally dubious, at worst a serious sin. But Ficino's earlier *Epitome* of Plato's *Apology* (described in the next chapter) confuses the issue. Briefly: in order to justify the Socratic oracle and demonic sign of the *Apology*, Ficino paints a favorable picture of the demons described in the *Asclepius* as ensouling statues and empowering them to deliver oracles. When the statues draw the demons down, they are artificial, natural, or divine vehicles of attraction and ensoulment – morally neutral or even praiseworthy. Ficino even makes Hermes a critic, not an advocate, of demonolatry. Had it come from an expert who had known the *Asclepius* for more than thirty years and knew it well enough to borrow its words and phrases, this would be a remarkably generous reading – but the young author of the E*pitome* was not yet so experienced.[64]

That the mature Ficino could have seen the god-making passages as anything but sins against religion – that he could have treated their reputed author as a critic of demon-worship – seems all the more implausible in light of Augustine's words in the *City of God*. "Hermes the Egyptian grieved," he wrote, "because he knew a time was coming when these empty deceits and ruinous impieties would be ended." But the Trismegistus whose reputation Ficino had once tried to save was the Hermes of Lactantius, not the Hermes of Augustine – not the idolater but the prophet, not the wizard but the theologian, the pious pagan honored among Sibyls and saints.[65]

Although he found more demonology than natural magic in the Hermetica, the fact remains that Ficino's appeals to Hermetic authority seldom have anything at all to do with magic, either natural or demonic. Because he had only the first fourteen discourses and the *Asclepius*, because he lacked the sixteenth discourse and other Hermetica that say more about magic, because he made only a little use of a few medieval Hermetica, he had no reason to treat Hermes as a master of natural magic. But he had strong motives to detach or distance him from the demonic magic of the *Asclepius*. Ficino's Hermes was an Egyptian ancestor of Plato; a theologian of Mosaic times; a prophet of divine power, wisdom, and will; a theologian like the Sienese Mercury who foresaw the coming of the Word as God's Son.

CHAPTER NINE

HERMES DOMESTICATED

KALOU KAGÔÊI SESOPHÊI BAINCHÔÔÔCH[1]

1 THOTH

Thoth was ancient Egypt's god of the moon, medicine, and messages; originator of law and social order; author of ritual and its sacred language. He showed himself as the graceful ibis, also as a baboon. He was the guide of dead souls in the afterlife and the maker of magic. As old as Egyptian religion itself, Thoth revived in popularity during the Ptolemaic era. He was still well known to the authors of the Greek Magical Papyri that accumulated for five centuries after the last Ptolemy died. One ancient magus, using the god's Greek name as well as the Egyptian THATH, asks him to

> appear to me in the divination, O high-minded god, Hermes thrice-great! May he appear, the one who made the four parts of the heaven and the four foundations of the earth, RESENNÊETHÔ BASENERAIPAN THALTHACHTHACHÔTHCHCHINEBÔTH CHINEBÔTH MIMYLÔTH MASYNTORI ASTOBI.... Come to me, you who are in heaven; come to me, you who are from the egg. I conjure you by ... the two gods who are about you, THATH. The one god is called *So,* the other *Aph*, KALOU KAGÔÊI SESOPHÊI BAINCHÔÔÔCH.

Invoking Hermes Trismegistus was common practice for the makers and users of the Papyri. In one of them a Hermetic spell is an "amazing victory charm" inscribed with the sacred name THOOUTH and meant to be worn around the ankle. A bolder recipe addresses the god as lord of language, justice, and death but also gives instructions for making a doll of Hermes out of wheat, wormwood, and an ibis egg. Spells appealing in

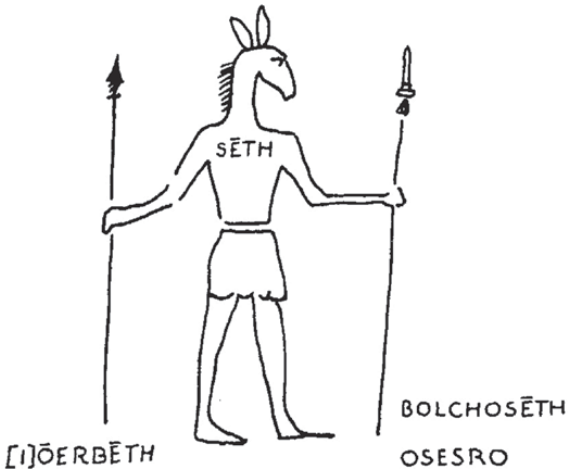


Figure 46. Seth in a Greek Magical Papyrus, Fourth Century CE. (Betz [1986], p. 169, from *PGM* 12.449–52)

mystic syllables to Hermes or other gods fill every page of the Magical Papyri, whose language sometimes sounds like the prayers that Christians were saying in their own sanctuaries.[2]

Following a spell naming Helios as ADÔNAI and describing him as a monkey, a bull, a donkey, and a crayfish, one prayer joyously thanks an unnameable god for gifts of mind and speech that enable mortals to know and praise his bountiful goodness. The prayer calls the deity "pregnant father," and the petitioner considers himself already "deified" while in the body; otherwise, it says nothing to startle a Christian cleric. A Coptic version of the prayer was found with the Nag Hammadi Codices, preceded by a *Discourse on the Eighth and Ninth* that uses the strange utterances familiar from the Magical Papyri.[3]

After the prayer and also in Coptic comes a large section of the *Asclepius*. This Coptic *Asclepius* breaks off well before the end of the text known in Latin, at whose conclusion we find the prayer again in the only version known before the publication of the Magical Papyri and the Nag Hammadi texts:

> We thank you, supreme and most high god, by whose grace alone we have attained the light of your knowledge; holy name that must be honored, the one name by which our ancestral faith blesses god alone, we thank you who deign to grant to all a father's fidelity, reverence, and love, along with any power that is sweeter, by giving us the gift of consciousness, reason and understanding:

consciousness, by which we may know you;

reason, by which we may seek you in our dim suppositions;

knowledge, by which we may rejoice in knowing you.

And we who are saved by your power do indeed rejoice because you have shown yourself to us wholly. We rejoice that you have deigned to make us gods for eternity even while we depend on the body. For this is mankind's only means of giving thanks: knowledge of your majesty.

We have known you, the vast light perceived only by reason.

We have understood you, true life of life, the womb pregnant with all coming-to-be.

We have known you, who persist eternally by conceiving all coming-to-be in its perfect fullness.

Worshipping with this entire prayer the good of your goodness, we ask only this, that you wish us to persist in the love of your knowledge and that we never be cut off from such a life as this.[4]

Closely paraphrased in *terza rima*, this prayer can also be read as the second in a sequence of four religious poems (*capitoli*) by Lorenzo de' Medici, beginning

Grazie a te, sommo, esuperante Nume,
da poi che per tua grazia, e non altronde,
della tua cognizione abbiamo il lume.

Nome santo, onorando: sol nome, onde
Dobbiam te benedir, sol con paterna
religion, cui tua bontà risponde.

In forty-three lines, Lorenzo's Italian poem reflects the generic piety of the ancient prayer as found in the Latin of the *Asclepius*.[5]

2 HERMES IN TUSCANY

Lorenzo and his Florentine audience had little information about the prayer's Hermetic ancestry, knowing nothing about its kinship with spells chanted and strange rites performed to get dark gifts from bestial divinities – Horus with his hawk's head, Anubis with a jackal's, and Thoth manifest as an ibis. Like Marsilio Ficino, who had translated fourteen of the Hermetic discourses when Lorenzo was a boy, the Magnifico may have worried about the god-making in the *Asclepius*, but other clues to the real Egyptian provenance of the Hermetica were few – so few that until recently scholars usually dismissed Egyptian elements in the Hermetica

as mere decoration, irrelevant to texts produced by a Greco-Roman culture in late antiquity.[6]

A later phase of scholarship identifies Ficino's new Greek Hermetica, and also the Latin *Asclepius* known to medieval readers, with a transformative moment in European history when – so the story goes – people first took charge of their natural and moral environments in a large and lasting way: the magic recovered by scholars like Ficino brought new power to act on the world and immense cultural energy; the Hermetica were conduits of this magical electricity. But the dazzling story distorts what Ficino did to revive the Hermetica, first by confusing that project with his theorizing about magic. Ficino revived Hermes as a theologian, not a magus, because the Hermetic texts underwrite Ficino's religious syncretism, not his theory of magic. Likewise, when Lorenzo wrote some Hermetic verses, his motives were also religious. The poems show how Hermetic wisdom was received in Quattrocento Tuscany as part of a local religious awakening, when Italian Christians saw Hermes as a prophet – not as the idolater who conjures demons in the *Asclepius*.[7]

When Lorenzo was born in 1449, Hermes was not unknown to educated Florentines, but neither was he yet as famous or as respected as he would be. Meditating on Petrarch's death in 1374, Coluccio Salutati referred a correspondent to an edifying speech given by the dying Hermes, expecting immortal life in a heavenly city and thus easing the pain of passing. Salutati used the medieval *Liber Alcidi*, probably written in the twelfth century, along with the *Book of Twenty-Four Philosophers* and other Latin texts that claim Hermetic authority – works related to Arabic pseudepigrapha. Salutati died in 1406, about five years after Leonardo Bruni gave him a part in his *Dialogues for Pier Paolo Vergerio*. Criticizing neglect of "the custom of disputation," Salutati speaks for the past century, challenged by Niccolò Niccoli, the voice of a new and more learned generation. Niccoli denounces ignorance so profound that people know nothing worth disputing about: the debates of the ancient philosophical schools had been forgotten, he complains, and even Cicero's eloquence had fallen into disuse.[8]

When medieval theologians looked for signs of the Trinity in the *Asclepius* and the *Timaeus*, however, they revived an older Christian desire to find a basis in ancient pagan philosophy for Gospel teaching. But this wish to trace the stream of sacred knowledge to a primeval source was both Christian and pagan in late antiquity. The Church Fathers and the Neoplatonists who promoted this powerful impulse in Western historiography were well known to Ficino, who sometimes puts Hermes at the

Figure 47. Idolatry: Worshipping the Golden Calf, from the *Nuremberg Chronicle*. (Schedel [1493], fol. xxxi^{r})

head of an 'ancient theology,' a tradition of pagan wisdom concurrent with biblical revelation and reinforcing it.[9]

Because the fourteen Greek discourses that Ficino translated in 1463 say nothing about magic, the prefatory letter that he sent to Cosimo de' Medici never mentions that topic. The Hermes of the letter is a king, a priest, and a philosopher but chiefly a theologian who wrote two books about attributes of God: the *Asclepius* on God's will; and the *Pimander* on God's power and wisdom. Since the twelfth century, Christian Platonists

had seen power, wisdom, and will as perfections of their triune deity – Father, Son, and Holy Spirit. Ficino credits Hermes with insight into this deepest Christian mystery. This irenic, syncretizing Hermes emerges from the juvenile works where Ficino also comments on Christian theology. Although later writings criticize the Egyptian for bad judgment about magic, he remains a venerable precursor of Christian truth.[10]

Identifying Ficino's Hermes as a theologian, not a magus, makes it easier to see why Lorenzo would go to the Hermetica to write religious poetry. Other questions also illuminate Lorenzo's choices. Just a few months after putting the first fourteen discourses into Latin, why did Ficino arrange for an Italian translation of the same texts? What was the audience in Tuscany's unlearned but literate population – literate in the *volgare* – for remnants of Egyptian wisdom?

The Thrice-Great Hermes made his most spectacular appearance since antiquity in a Tuscan church of the Virgin Mary. The content of the marble inlay of Mercurius on the floor of Siena's Duomo comes from the pages of Lactantius, where the old god stands proudly among Sibyls and Bible prophets who foresaw that God would beget a divine Son from a human mother. The splendid troop of ten Sibyls that surrounds Hermes arrived before him, in the early 1480s. When Hermes joined them a few years later, Ficino's *Pimander* was twenty-five years old and had been in print for seventeen years. Yet the pavement of the Sienese cathedral shows no sign of the discourses translated by Ficino. The literary elements of the Hermes marble and the Sibyls surrounding it come from the *Institutes* of Lactantius and the *Sibylline Oracles*. Those who planned the pavement in the 1480s either did not know Ficino's *Pimander* or chose not to use it.

Siena and Florence are close, and Ficino was a celebrity by 1484 – when his Latin Plato was printed. The omission was deliberate, no doubt, perhaps motivated by the usual *campanilismo*: the proud Sienese, having already decorated their church with a panel showing Florence as a lesser city, would not want to advertise a famous Florentine's discoveries. But theology is another explanation: although Ficino's newfound Hermetica affirm Christian beliefs about scripture, the sacraments, and the soul, they also introduce riskier ideas, especially about Christology and an ambiguously gendered God. Maybe it was safer to stay with the familiar account of Hermetic prophecy given by Lactantius.[11]

Whatever problems their designers foresaw, the Siena marbles display Hermes proudly as a herald of Christ. In this sacred spot that houses a heathen god, what other Hermetic image might have been shown? Is it thinkable that the good burghers of Siena wanted the faithful of their

Figure 48. Moses, Aaron, and Pharaoh's Sorcerers, Spain, 1325–50. (British Library MS Add. 27210 fol. 11)

town to pray with an Egyptian wizard, a cousin of the sorcerers who battled Moses and Aaron? One analysis concludes that the Hermes panel alludes to the Hermetic art of alchemy. But many other images, inside and outside the church, situate the panel so plainly among traditional themes of Christian belief that no such reading is plausible – even if the evidence for an allusion to alchemy were stronger than it is. The Sienese welcomed Hermes to their church because they saw him as an ancient theologian friendly to the Gospel.[12]

If the Siena panel was still an acceptable presentation of Trismegistus as late as 1488, just before Ficino published his strongest criticisms of the god-making in the *Asclepius*, the reception of Hermes as a benign pagan prophet was even more natural in 1463 when Tommaso Benci put the *Pimander* into Italian. At that time, even the most learned Italians knew Hermetic thought only from the *Pimander*, the *Asclepius*, or medieval Latin pseudepigrapha. Some Latin Hermetica, like the *Book of Twenty-Four Philosophers*, preach the same vague spirituality found in the Greek Corpus. But other Latin works, like the *Book of Hermes* or the *Fifteen Stars, Stones, Plants and Images*, teach astrology, divination, and medical magic. Ascribing this technical literature to Hermes did not disqualify him as a theologian. Since the recipes for healing and predicting lack the *Pimander*'s theoretical weight – muddled though it is – they would not attract attention from critics worried about theological or liturgical error.[13]

In any case, the Hermes consulted by Salutati for a death-speech was attacked by Bruni more for bad Latin than for bad doctrine. Italians of his day had little reason to see Hermes as anything but an amicable ancient theologian: the full title of the book that contains his dying words is the *Book of Alcidus on the Immortality of the Soul,* an appealing topic for Christians who wanted to dignify their faith with ancient wisdom. The thoughts of the failing Hermes also appear in manuscripts of Ficino's *Pimander* and Benci's *volgare* version, testifying to the popularity of this fragment of pagan hagiography after Bruni snubbed it. Ficino himself copied a passage of the *Liber Alcidi* in the 1450s. In the same manuscript – along with material used later to give Hermes his theological credentials – he also transcribed the last part of the *Asclepius,* ending with the final prayer that Lorenzo would turn into verse.[14]

When he copied the end of the *Asclepius,* he was still learning Greek and writing in Italian about God and the soul, the family, fortune, and consolation for death – topics often discussed by his peers in Latin essays. But Ficino, in training to become the master Hellenist of his age, addresses a vernacular readership with more expansive expectations for philosophy than Bruni's *Dialogues* had assumed earlier in the century. Even after he had made his name as a classicist, he kept his more generous sense of intellectual community, not only for original work like the *Della Cristiana religione* of 1474 but also in translating Dante's *De monarchia* in 1468. A big step along the way was finding an Italian translator for his *Pimander* in the same year the Latin version was finished.[15]

The translator, Tommaso Benci – addressing Cosimo as patron of the *Pimander*'s translator – sends him a letter to introduce the Italian version and explain why Ficino had asked him to do the job:

> Because the contents are of the greatest value, since they deal with the power and wisdom of God, some of Ficino's friends who were not well educated in Latin begged him to do it again for them in our language. But he was busy with more important projects, even though he genuinely wanted to satisfy these people, and so he gave me the task of putting it in the vernacular, not as someone more learned but as someone of whom he, in his kindness, was perhaps rather fond.

Benci came from a family active in Florence's high culture since the late Trecento, when an ancestor had been on good terms with Salutati. Tommaso and the other Benci of his generation continued the family's work of copying books and collecting them. They concentrated on vernacular poetry and prose, including not only Italian versions of fashionable Latin texts but also chivalric literature and medieval history and scholarship. Tommaso, describing himself as "still busy in the merchant's trade" when he translated the *Pimander*, had the backing of a mercantile family that could exploit Florence's cultural resources. Bringing the words of Hermes to his countrymen brought him into contact with the latest doings of Florence's intellectual élite.[16]

How did Tommaso see the discoveries that made him Mercury's messenger to the good citizens of Florence? He describes the texts that he translated as

> great and uncommon things ... shown to be revealed to Mercury by God and hence not comprehensible to anyone without careful reflection. Thus, since God, Creator of all, who is complete goodness and truth pure and simple, wishes to give people knowledge of Himself or of His secrets, it must be either that He reaches down to human capacities or truly that He raises a person up from the common nature of other humans to the level that he can attain. That the Good Lord reaches down in his kindness and grace needs no proof, for all creation makes it plain. And that He raises man up to a higher level is also quite clear from the examples of the prophets and apostles of our holy religion. However, after having thus withdrawn inside the mind, one cannot stay forever at such a level, so when a person comes back down to the ordinary nature of other people and wishes to make clear to them what was revealed to him, he cannot find the right words in speech or in writing to show the idea of what has happened.... In spite of all, having read this work of Mercury's and gone over it many times, it seems to me that much of God's greatness shows in his writing, even though he was a pagan.

Benci does not just rephrase the letter that Ficino had written to introduce the *Pimander*. He expresses his own understanding of the Hermetica as special revelations to a gentile prophet whom God had lifted beyond normal human powers of mind to the ecstasies of apostles and saints. Like Ficino, but with his own focus on the raptures of the first and thirteenth discourses, Benci declares Hermes a visionary pagan witness to Christian truth. Like Ficino, he says nothing at all about magic. And by making his case in the vernacular, he builds a bridge between Ficino's classicism and ordinary Christian piety.[17]

About ten years after Benci's translation, when Lorenzo wrote his Italian poems on Hermetic themes, he took two of them from the treatises where Benci found the core of the Hermetic message, thereby continuing the conversation between Florence's lay and learned cultures and giving it the seal of his authority.[18]

3 LORENZO AND HERMES

Three of Lorenzo's religious lyrics have long been recognized as close renderings of Hermetic texts. They are usually read in a set of seven poems, probably meant as two groups: the first five are paraphrases; the last two apparently original. The first of the former group uses seventy lines to render the twenty-eight hexameters of *O qui perpetua*, the metrical fulcrum of the *Consolation of Philosophy* by Boethius. Alluding to the *Timaeus*, Boethius has just asked his main question: he must know what true happiness is in order to distinguish it from the false kind, starting with a prayer to the divine Father, a dense but engaging hymn of praise in the manner of the later Neoplatonists, like Proclus and Synesius.

Those philosophers glorify the One as manifest in the orderly beauty of the cosmos. Boethius exalts the Good for having made the world out of a stable, eternal, and immaterial bounty that originates all movement without being disturbed by it. The Good is the perfect, ungrudging form of order and intelligence imitated by lower entities that derive their coherence and beauty from the vital soul and light flowing from on high: from this "quiet rest for the reverent," Boethius turns to the next prose section of the *Consolation* that locates our true happiness in God, the greatest Good.[19]

The questions and answers of the *Consolation* recall the themes of Lorenzo's *Altercazione*, a debate in verse on the highest good that ends with a prayer to the "venerable, immense, eternal light" and uses two of Ficino's works, the letter *On Happiness* and the *Theological Prayer to God*. Lorenzo ends the first of his five prayerful poems on a similar note,

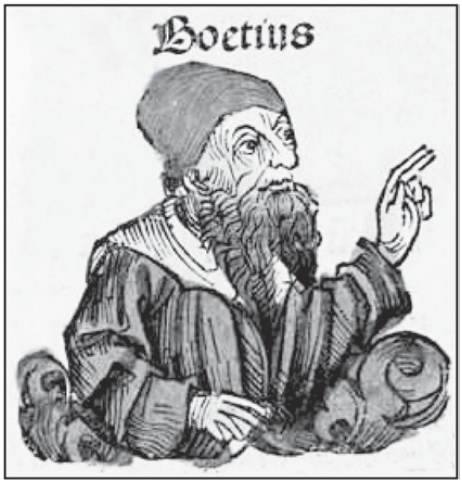


Figure 49. Boethius in the *Nuremberg Chronicle*.
(Schedel [1493], fol. 141v)

calling God the "sweet rest" that must end, as it began, every human journey, and asking to see the true light of divinity:

> Fuga le nebbie e la terrestre mole
> leva da me, e splendi in la tua luce:
> tu se'quel sommo Ben che ciascun vuole.
>
> A te, dolce riposo, si conduce,
> e te, come suo fin, vede ogni pio;
> tu se' principio, portatore e duce,
> la via e 'l termin tu sol, magno Iddio.

Lorenzo's voluble rhymes do justice to the message of the *Consolation* without capturing the graceful economy of its Latin. They also interpret Boethius in light of Ficino's exposition of Plato.[20]

The last of the five poetic prayers is brief: Lorenzo expands fifteen lines of Psalm 1 in the Vulgate to just eighteen. Following his original closely, the poet distinguishes the wicked from the righteous as they stand in God's gaze:

> Beato chi nel concilio non va
> dell'impii, e nella via molto patente
> de'peccatori il piè non ferma, o sta,

né siede nella sede pestilente;
ma giorno e notte la legge divina
brama nel cor, tal legge ha nel mente.

Third-person description makes this fifth poem unlike *O qui perpetua* and also unlike the three intervening prayers that imitate Hermetic hymns: all either address God directly or apostrophize natural and personal forces. Sharing this feature and others makes the first four poems read like a set, apart from the fifth, which differs in form and content. The first four are hymns of thanks and praise to a mighty God, while the fifth describes human character, its failings and its strengths.[21]

The transition from Lorenzo's first hymn to his second would have made good sense to medieval readers of Boethius and the Latin Hermes. Boethius prefaces a declaration of cosmic piety in the ninth poem of the *Consolation* with a reference to the *Timaeus*. This work of Plato's, with commentary by Calcidius, had been linked with the *Asclepius* because parts of the Hermetic text reflect the theology and cosmology of Plato's dialogue. Medieval Christians honoured Boethius as a martyr, but some doubted the orthodoxy of his Platonizing theology. They also respected the *Asclepius*, despite the god-making passages. They knew other works of Hermes as well, Latin versions of Arabic pseudepigrapha or remnants of older Greek texts on astrology, divination, healing, and related topics. If these technologies or more abstract speculations by Boethius caused worry, the anxiety could be relieved by new insights into Platonism and the ancient theology – the doxography constructed by Ficino. Hermes was a plausible patriarch for a pious ancient theology, and Boethius was a credible heir – from a medieval point of view and also in Ficino's opinion.[22]

But Lorenzo bases his third and fourth prayers on Hermetic texts unavailable in the Middle Ages. The third uses the hymn that concludes the first Hermetic discourse, the *Poimandres*. The fourth imitates a longer hymn from the thirteenth discourse on mystical rebirth. Of the four Hermetic hymns known after Ficino's translation of 1463, Lorenzo makes use of three: one from the *Asclepius*, the other two from passages of the *Pimander* that recount visionary experiences of the soul's ascent, as emphasized by Benci in the letter introducing his translation. Ficino also noticed the hymns in these discourses: even earlier, one of them had caught the attention of the scribe of the Greek manuscript that he used for his translation. Why Lorenzo did not use the hymn in the fifth

discourse is unclear: maybe its form was not obvious to him, or maybe its theology was obscure.[23]

The basis of Lorenzo's second prayer, the hymn that closes the *Asclepius*, is theologically problematic, but its hazards stand out only against the background that Ficino was still exploring while Lorenzo was writing. As with Lorenzo's other Hermetic poems, the *Asclepius* hymn needed little to adapt it to the poet's lyrical needs, though his intentions differ – always in the direction of Christian rectitude – from the original as we now read it. Where Lorenzo's hymn thanks God for "*consecrating* us to the high, eternal cloisters" even while we remain in the body, the Latin makes the same point: "we rejoice that you have deigned to *consecrate* us, while sited in our bodies, to eternity." This awkward Latin goes smoothly into Italian as

> E, stando ancor ne' fragil corpi nostri,
> sentiam dolcezza, che così mortali
> ci hai *consecrati* agli alti, eterni chiostri.

Before the Greek Magical Papyri were found, however, no one knew that the Greek verb behind *consecrare* in the *Asclepius* is 'deify' (*apotheoô*), suggesting a stronger statement: "make us gods for eternity."[24]

Likewise, when Lorenzo addresses the "high and true Nature that fully impregnates every nature," the corresponding phrase in the *Asclepius* is vague, addressed to a "true life of life" who is also a "pregnancy (*praegnatio*) fertile with all natures"– reason enough for Lorenzo to father the impregnating act on a male God who inseminates the All through Life and Nature as distinct female principles:

> Te intendiam, Vita vera, onde pervegna
> ogni altra vita, o Natura alta e vera,
> ch'ogni natur pienamente impregna.

Not even Ficino knew that the "womb (*mêtra)* pregnant through the Father's begetting"– in another version of the same hymn from a Magical Papyrus – may be a womb belonging to a God who inseminates Himself/Herself.

But androgyne divinity, divinized humanity, and other theological traps are everywhere in the *Asclepius* and the Greek discourses. Ficino, whose translations typically stick to the original even where it threatens Christian sensibilities, found it awkward to deal with the androgynous God of the *Poimandres*. Using the Latin *Asclepius*, however, Lorenzo could compose a Hermetic hymn fit for Christians just by following the text

in front of him. For Ficino to miss the implications of the language about impregnation, even disguised in Latin, would have been harder because he understood the *Asclepius* in light of his expert knowledge of the Greek discourses.[25]

The roots of the Hermetic text that Lorenzo chose for his third prayer reach back to Jewish liturgy – unknown to the poet, who had grown up with the Catholic rite evoked by Ficino's Latin, where repetitions of *sanctus* (*hagios*) head verses that echo the triple blessing of the Mass. Where the first discourse hallows a transcendent God "of whom nature has not made a like figure," Ficino (in the first printed edition) translates 'formed' or 'figured' (*emorphôsen*) as *creavit* –"whom nature has never created (*creavit*)." Lorenzo comes closer to the Greek with "nature never formed you":

> santo Iddio, del qual solo immagin è
> ogni natura; santo per essenzia,
> perché mai la natura *formò* te.

Was this just vatic luck, or did Lorenzo consult a Greek manuscript, or did Ficino advise him on a better choice than his own original wording? More likely, Lorenzo used not only Ficino's Latin, dedicated to his grandfather in 1463 and printed twice since then, but also Benci's Italian, though it circulated only in manuscript until 1548. Manuscripts (but not the first printed text) of Ficino's translation also have 'formed' at this point in the final hymn of the *Poimandres*, where Benci writes *sancto tu il quale giamai non fusti formato della natura* – just as Lorenzo puts it. Nothing much is at stake doctrinally, however, even though "created" in the first printed *Pimander* is dubious dogma.[26]

A later passage carries more freight, where Lorenzo's prayer asks the Lord for strength and for the ignorant to share this grace:

> Esaudimi, Signore, e fammi forte,
> e *fa*' in tanta *grazia* meco pari,
> *partecipi* di questa santa sorte,
> color che son di tanto bene ignari.

Lorenzo follows Ficino faithfully –"give me strength (*corrobora me*) and *make them* (*effice eos*) share" – where the *Pimander*, either consciously or accidentally, dampens the theological charge on the Greek. The key words are "give me power (*endunamôson me*), and *I shall* enlighten them (*phôtisô tous*)," so that the enlightening agent is not the Creator but a

creature who wants not grace (*grazia, charis*) but power (*dunamis*) of the kind purveyed by the Magical Papyri. Ficino, with his special insight into the Hermetica and related Greek literature, will have spotted such problems more easily than Lorenzo, who had to use either the *Pimander* or Benci's version, which is *fortifichami & fa partefici di questa grazia coloro i quali ignorantemente vivono* – very close to Lorenzo's prayer.[27]

The third and longest of Lorenzo's Hermetic hymns is his fourth prayer. Its closing wish "to find rest in your will" mirrors the end of the first poem, strengthening the case that the four hymns of praise are a set:

> Dall'eterno ho benedizion trovato,
> e spero, come io son desideroso,
> trovar nel tuo desio tranquillo stato:
> fuor di te, Dio, non e vero riposo.

The supplicant starts by silencing the forces of nature so that he can sing the glory of the Lord and Creator who made the world for man and gave him knowledge. Summoning his own inward powers and virtues, he then makes a "speech offering," appealing for life, enlightenment, and spiritualization before finding his rest in a divine vision. Where the Greek text thanks God for giving fire to gods and humans, Ficino's Latin expresses the polytheism straightforwardly: "commanding the fire to blaze on high for the deeds of men and gods (*deorum*)." Benci does the same: *che chomanda il fuocho risplendere alle superne operationi delli huomini & delli iddii*. But Lorenzo turns "gods" (*theois, deorum, iddii*) into a singular God duly worshipped by humans:

> pel quale ancor comanda, sopra splenda
> il foco, e per chi *Dio* adora e cole.[28]

Lorenzo, Ficino, and Benci all treat 'blessed knowledge' (*gnôsis hagia*) as coming from the divine light, but the Greek implies that gnosis itself is the illumination. Exalting knowledge in that way may have worried Ficino, and repeated references to the supplicant's powers (*dunameis*) may also have bothered him. At first he makes the powers into *potentiae*, then *vires*, perhaps varying the Latin words to blunt the force of *dunamis* repeated by the Greek text. Benci has *possanze* and *potentie*. Lorenzo is even more versatile, moving from *potenzie* to *forze*, then to *virtu* and back to *potenzie*.

Where Ficino and Benci get the supplicant's virtues wrong –'constancy' (*constantia*) instead of *continentia* and *continenza* for 'self-control'

(*egkrateia*), 'community' (*communio*) instead of *liberalitas* and *liberalità* for 'generosity' (*koinônia*) – Lorenzo follows suit:

> O tutte mie potenzie, in gran dolcezza
> meco cantate; O spiriti miei *costanti*,
> cantate la *costante* sua fermezza.
>
> La mia giustizia per me il Giusto canti;
> laudate meco il Tutto insieme e intero,
> Gli spiriti *uniti* e' membri tutti quanti.[29]

Ficino missed the crucial pun in *Discourse* 13.19 where Mind "shepherds (*poimainei*) your word," alluding to *Poimandrês*, just named in the same discourse: Poimandres had already appeared in the first discourse to preach a vision of Logos theology. Despite the precedent of John's Gospel, where Jesus is "the good shepherd" (*ho poimên ho kalos; pastor bonus* in the Vulgate), Ficino did not make the connection: instead of 'tend' (*pasco*) or some other shepherding word, he chose 'guide' (*rego*). Benci mimics Ficino with *reggie*, and Lorenzo does the same:

> Spirto Dio, il Verbo tuo la mente *regge*,
> Opifice, che spirto a ciascun dài,
> tu sol se' Dio, onde cosa ha legge.

If proof were needed that neither Benci nor Lorenzo looked at the Greek manuscript – it clearly reads *poimainei* – that Ficino used to translate the first fourteen *logoi*, it would lie in their having joined him in missing this opportunity to connect the good shepherd of the first discourse with the theology of the thirteenth, which Lorenzo also interprets in his prayers.[30]

If Lorenzo read the rest of the Hermetica, whether in Ficino's Latin or in Benci's Italian, even he must have seen more pitfalls in them than in the three selections used for his prayers. The formal reason for his choice of Hermetic texts was that he wanted to write hymns. But he also had doctrinal motives: few parts of the Hermetica are better suited to ordinary Christian piety. The hymns he chose are so adaptable in the way they address God that he found little to correct in them. The few traces of amendment suggest that he wanted Hermetic formulas ready for Christian use.[31]

Well-known connections between Hermetism and Christian Platonism confirmed by Lactantius, Proclus, Boethius, Calcidius, and the *Asclepius* made the three hymns selected by Lorenzo all the more suitable to the religious climate already evoked by his *Altercazione*. Beyond the resemblances of Lorenzo's prayers to Ficino's *Pimander* and

Benci's Italian version, we know nothing else about the great Platonist's influence on Lorenzo's Hermetic poetry. But both Ficino and Lorenzo wanted a tame Hermes. There is no trace of magic in Lorenzo's poems, much less any sign of Egyptian idolatry. The Hermes honored – though never named – in the Magnifico's prayers is a pious theologian and in no way a magician. He is the reverent Mercurius Trismegistus who looked to the young Ficino like Boethius and Plato – a friend to Christian Platonists.

4 SOCRATIC DEMONS

As early as 1456, Ficino had found a Hermes to reconcile with Plato and the Church. His early study *Of God and the Soul* that cites the ninth poem of the *Consolation* also contains his longest comment on any Hermetic writing. *The Book of Twenty-Four Philosophers* records maxims abstract enough to support nearly any kind of monotheism. Finding that its author, "the philosopher Termegistus," agrees with Plato about God's attributes, Ficino concludes that both are better theologians than Aristotle. Hermes was "an Egyptian philosopher far more ancient than the Greek philosophers," and both peoples called him "a god because of his boundless understanding and knowledge, surpassing any human talent." Hermes "expressly puts three properties in the divine substance – power, wisdom, and goodness." Plato argues the same point, making God's goodness the "end that has moved His power and wisdom to produce the world." Ficino adds that "Boethius gives a similar account in his Platonic verses," meaning *O qui perpetua* – the model for one of Lorenzo's religious lyrics.[32]

The main topic of Ficino's early statement of Hermetic theology in *Di Dio et anima* is the maxim that compares God to "an infinite sphere, whose center is everywhere, whose circumference is nowhere." Years later, discussing creation in the *Platonic Theology*, Ficino cites that gnomic line again but names no author. The saying was renowned, and Ficino wanted to support Plato with Hermetic authority: can the silence be accidental? Had something changed between the account of the spherical God from the 1450s and the *Platonic Theology* finished in 1474? Most of all, Ficino was now an accomplished Hellenist: he had translated not only Hermes but also a great deal of Plato. Perhaps the reticence of his masterwork on Christian Platonism was philological. Why credit such memorable language to Hermes when it appears neither in the Greek discourses nor in the *Asclepius*?[33]

Having rescued fourteen Greek Hermetica, did Ficino now doubt the authenticity or probity of other such writings read in the Middle Ages, some of them relics of ancient and medieval technical literature on alchemy, astrology, and divination? He faced no risks of this kind with the image of the sphere, which was safe, striking, and famous. But the lean aphorisms of the *Twenty Four Philosophers* pale beside the Greek Hermetica, so full of religiosity, so loaded with Platonic enthusiasm – Platonic in Ficino's sense. Why Ficino had briefly dropped Plato for the Greek Hermes in 1463 is easy to see. He wanted to find a Platonic genealogy for Christian doctrine. Hermetic scripture confirms Mosaic scripture: of that he found proof in the *Pimander*, where he also saw plenty of Platonism. But there was trouble in at least one record of Hermetic wisdom, the *Asclepius*.

Ficino discusses the god-making in the *Asclepius* only a few times – briefly in most places. One passage does not name Hermes at all but suggests that the magic involved was cultic rather than natural. Four others are too short to say much about the statues, which are treated more fully in *De vita* 3.26, the commentary on Romans and the *Epitome* of Plato's *Apology*. Although the Hermetic rite is at least morally dubious – and perhaps worse – according to the Romans commentary and the final chapter of *De vita*, the *Epitome* disagrees, maintaining that Hermes was no idolater. This defense is more compatible than the other two works with the happier account of Hermes promoted by Ficino from the start of his career. Although the *Epitome* was first printed in 1484, Ficino had probably written it by 1469. It is an early piece, composed even before the *Pimander* went into print in 1471. The two works that contradict the *Epitome* are late, however: they are products of Ficino's last years, after Pico's troubles with the Church, when Ficino himself had to defend his theory of magic in an *Apology*.[34]

Although Plato's *Apology* is about Socrates at his trial, Ficino's *Epitome* of that dialogue is mostly about demons. He had two reasons for this odd choice. First, the *Apology* contains evidence that Socrates listened to a private voice or sign, sometimes called a "demonic sign"–*to daimonion sêmeion* or simply *to daimonion*. Second, Socrates claims in his speech that an oracle of Apollo caused him to go around questioning people, in order to see if the god was right to say that he was the wisest man in Athens. As Ficino puts it,

> the *Apology* requires us to say something about oracles and statues. In the first place, if you ask why demons do not work their once accustomed wonders in our day, the answer will be that Christ deprived evil demons of their power and that he took all worship of demons as well

> as demonic art away from humans. But if you ask how demonic influences are attracted into statues or people, listen carefully.
>
> In the normal course of events, a natural object is attracted by art. This happens every time a piece of wood is coated with oil or soaked in sulfur when it is too dense and heavy for a light flame to kindle, and then they put flame to the tinder. It is also normal for a divine object to be attracted by nature. The fetus stays settled in the womb, taking on form and activity only if it draws in a human soul from God through nature, as a statue receives a demon from the cosmos through magic. Hence, the Egyptians also talked about nature in this way, locating the force of magic itself in a certain attraction of similars through similars, or at least of conformables through conformables.
>
> In everyday life, you utter a word and you project an image of the way you look. But your word and image do not come back to you in all circumstances – only if there is a wall standing opposite you to reflect the word through an echo and a body to act as a mirror and send your image back to you. Put the wall there as a mirror, and right away you will be completely within it, so to speak, for there you will be seen, heard and understood, almost like the demon in the statue.
>
> If you consult Trismegistus, you will learn that if a statue is made correctly of proper materials from the cosmos to suit a particular demon, the statue is immediately ensouled through the demon that suits it – either through a demon, he says, or through an angel.... You will also hear this Mercury condemning many of the ancients because, when they despaired of powers beyond heaven or of prayers from earth reaching the heavens and beyond, they constructed statues for the demons to dwell in and worshipped them as if they were friendly gods. Obviously he thought that harmful demons often come down, even when they summon helping demons into the temples.[35]

Since the coming of Christ, evil demons have had no independent power, and humans have had no right to deal with them. But in ancient times demons visited statues – events that can be understood by thinking of a demon entering a statue as like a soul enlivening the fetus or a flame kindling wood, mechanisms also used by Proclus to explain magic. If the wood is soaked beforehand with oil or sulfur, art induces the flame's natural power. By analogy, when the seed enters the womb, nature prepares the way for the divine inspiration of a soul into the fetus. This is also how magic draws the demon into the statue, acting like nature and art in the two other cases. And this is why the Egyptians say that magic is natural resemblance.

To be seen as a reflection, a visible sight needs a mirror; to be heard as an echo, an audible sound needs a wall; to be sensed or to act through a body, a demonic spirit uses a statue. Projected by the mirror and the wall, the optical and auditory effects resemble their ordinary natural causes; the statue, however, represents a being higher than physical nature. Yet when a demon inhabits a statue made of matter, the relation of the material object to the immaterial agent is like the relation of a mirror to a visual image or of a wall to an aural image. All the relations involve artifice – to amplify human powers by manipulating nature or, in the case of the demon, supernature. The demon who enters the statue may be good or bad, as Hermes concedes. He also condemns the ancients for doubting the existence or goodness of supercelestial gods and for replacing their due worship with demonolatry. Even if good angels were called down, an evil spirit might come instead. A rational soul will attract higher demons, but a disturbed soul will attract the lower, destructive kind. Plato trusts only oracles from higher demons – signs from angels, a Christian might say – having learned from the Egyptian mysteries that evil demons live in hell.[36]

To justify the Socratic oracle and demonic sign, Ficino exculpates the rites of the *Asclepius*. He explains how demons are attracted into statues by analogy with artificial, natural, and divine actions that are permissible (burning, reflection) or even praiseworthy (divine ensoulment of the fetus). And he presents Hermes as a critic of the demonolatry in the *Asclepius*. But he does not mention that both the god-making passages start by praising mankind as a miracle *because* humans imitate divinity when they make images of gods – idols, in other words.

When Ficino reads these texts as not irreligious, when he treats Hermes as an enemy of demonolatry, he shows how anxious he is to protect the good name of the Egyptian prophet, whom he regards as a herald of God's power, wisdom, and will. When he wrote about the *Apology*, his wish to domesticate Hermes was overdetermined: he also needed a tame demonology for Socrates and Plato. Elsewhere, Ficino's Hermes seldom has anything to do with magic. Trismegistus is an ancient theologian, Plato's ancestor, the same Hermes who stands with Boethius behind the harmless hymns of the young Lorenzo – uplifting religious verse in the vernacular to edify the good Christians of Florence and flatter the devout Platonist who was uncovering new proofs of the faith in the remains of ancient wisdom. Any congregation that heard Lorenzo's prayers in Florence would despise the chants of ancient magicians.

Figure 50. Idolatry.
(Olavus Magnus [1555], p. 97)

Jacob Burckhardt thought highly of Lorenzo's hymns, though he had no idea of their Hermetic pedigree. He used them to close the last, dark section of his great essay on the Renaissance, which deals with "morality and religion" and ends the book on a brighter note than one might expect from earlier sections. Burckhardt thought that unrestrained individualism had eroded institutional religion and personal morality, but that a novel Christian theism had partly restored them. This new attitude replaced the medieval "vale of tears" with a happier scene: the world changed into "a great moral and physical cosmos" created and sustained by a loving God.[37]

Burckhardt's book appeared in 1860, shortly after Parthey's *Poemander* of 1854 and well before Reitzenstein's *Poimandres* of 1904 – the works that inaugurated modern Hermetic scholarship. Even if Burckhardt had anticipated Bonardi's discovery in 1894 that three of Lorenzo's hymns are Hermetic, he would have had little reason to connect a progressive Christian theism with similar notions of "cosmic piety" in some parts of the Hermetica. Still, an optimistic reading of Lorenzo's Italian poems could apply equally well to their remote Greek sources, but only by ignoring the metaphysical pessimism that clouds other sections of the Hermetica. Like Lorenzo's poetry, the Greek Hermetic hymns would seem all the happier if they were interpreted by way

of Boethius and the *Timaeus*, as Ficino intended. Uninformed about much that now shapes our reading of the original Greek and Latin texts, Burckhardt left an account of Lorenzo's versions that still holds up as an insight into their religious meaning for the poet's Italian contemporaries.[38]

That Lorenzo meant to praise a beneficent creator, not to glorify the spells of a magus, suits his relationship with Ficino, who dedicated his *Pimander* to Lorenzo's grandfather in 1463. After Cosimo died a year later, Ficino's connection with the Medici weakened under Piero and did not soon recover when Piero died in 1469. Lorenzo's *Simposio*, written by the end of that year, parodies Ficino's treatment of Plato's *Symposium*, and when Ficino finished his famous commentary on the dialogue, he did not immediately dedicate it to Lorenzo. His interests converged with the young statesman's only later when Lorenzo became Tuscany's philosopher-king. That was when he expanded the treatise *On the Greatest Good* that he had written in 1473 by adding sections from Ficino's *On Happiness* and his *Theological Prayer to God* – changes that produced the *Altercazione* in 1474. This long poem retracts the flippancies of the *Simposio*, making Ficino visible again as Lorenzo's philosophical *consigliere*. The *Altercazione* appropriates a personal and political connection made by the wise Cosimo and first advertised by Ficino's *Pimander*. For his part, Ficino wanted Lorenzo's patronage, which might give him a chance to outdo Plato as a counselor of princes.

Needing to be seen now as Cosimo's reliable heir, not Luigi Pulci's rakehell companion, Lorenzo reasserts himself as Ficino's patron and seeks his advice. Early in 1474, the reckless Pulci – close to Lorenzo in boyhood and always ready to party – came under attack for offenses that led Ficino to call him an irreligious liar. Though the philosopher had given the poet cause to speak ill of him, the fight with Pulci prompted Ficino to warn his patron against flattery and calumny. Pulci's *Morgante*, with its plotting magicians, philosophical devils, and ribald mockery of everything sacred, surely displeased Ficino.[39]

While the bad blood was curdling, he wrote most of his surviving letters to Lorenzo: twenty-one remain from the months of January through September 1474 – the first and also the last good evidence of earnest, mutual effort to settle a bargain of dependency. Ficino tells Lorenzo to keep his word, treat his friends generously, follow the chaste Muses rather than the voluptuous Sirens, and make good use of the precious time that no one can afford to waste in profligacy: Lorenzo, in other words, should make himself a mirror for Ficino's image of Cosimo as

the philosopher-king of a Christian Republic. From his sickbed, Ficino wrote a chiding letter to tell Lorenzo that

> nothing hurts my spirit worse than to recall time spent uselessly.... So I beg you by God eternal, my dearest patron, to spend the most precious coin of this very brief time we have sparingly and prudently, lest – to no avail – you regret squandering it wastefully and irretrievably. Wasting time ... made the great Cosimo sigh heavily when he was more than seventy and I was often with him.... Ransom yourself from this wretched captivity while you can, I beseech you.... What I ask is easy, Lorenzo: ... please use one hour well every day to feed your mind with the liberal arts.... Enjoy yourself rarely in fun and games, for God put you where you are for greater things, or rather for the very greatest. I know what I'm talking about.

Though only four of the surviving letters are Lorenzo's, he seems to have accepted all this with patience. Relations were good enough in 1474 for Ficino to dedicate his most important statement about religion, *De Christiana religione*, to the young ruler. This was the climate of high-minded piety and philosophy that decided Lorenzo to turn some Hermetic hymns into Italian. His poems had to support a campaign of philosophical image-building, which was shortly to fail when Ficino befriended enemies of Lorenzo who would be linked to the conspiracy of 1478. Lorenzo's Hermetic lyrics had to fit his earlier partnership with Ficino – the philosophical monitor of progressive Christian probity in Florence.[40]

A different description of Hermetic wisdom, older than Burckhardt's praise of Lorenzo's hymns, captures the meaning of this ancient Egyptian lore in the third quarter of the Quattrocento. It comes from a notice in the first printed edition of the *Pimander*, issued in 1471 by Francesco Rolandello, an enterprising Treviso publisher who acted without Ficino's knowledge. Ancient theology was the selling point for the clientele to whom Maestro Rolandello advertised his books:

> You who read this, whoever you are, grammarian or orator or philosopher or theologian, know that I am Mercurius Trismegistus, whom the ancient theologians – first the Egyptians and barbarians, then the Christians – respected for my remarkable theological teaching, which astonished and greatly awed them.[41]

Lorenzo, Ficino and their contemporaries, who could now read the Greek Hermetic discourses in Latin or Italian, were likewise amazed by Hermes and his theological foresight, but they did not need to be enchanted by his magic.

CHAPTER TEN

HERMES ON PARADE

A son of true wisdom
sends greetings to Giovanni Mercurio.[1]

1 MAGIC ON TRIAL

In 1327, when Cecco d'Ascoli – born Francesco Stabili – was burned at the stake in Florence, two of his books burned with him. *L'Acerba*, the better known, is a medley of cosmology, botany, mineralogy, and moral psychology remarkable mainly for its form: it is a long didactic poem in Italian. Latin is the language of the other work, a commentary on the *Sphere* by John of Holywood, and its content is less ordinary: Cecco wrote it in his role at the University of Bologna, where he taught medicine and astrology. He had an exalted view of his subject, calling it

> our intellectual glory, the divinity in human nature to be sought beyond the glory of riches, as Hermes says.... For it is better to know the nature of heaven than to be made noble by it.... Indeed, this is the science that makes a human divine and lets him outdo the angels in foreseeing the future.

Cecco transformed the elementary astronomy of the *Sphere* into an astral magic depending on demons. Stationed at the four cardinal points of the heavens are "Oriens, Amaymon, Paymon and Egim, spirits from the greater hierarchy, and each has twenty-five legions of spirits under him who ... want sacrifices of human blood as well as the flesh of a dead man or a cat." The *Sphere* gives a more abstract account of the cardinal points and calls it 'astrology,' but according to Zoroaster, "who first invented the art of magic," the same doctrine is 'necromancy' when demons make it work. The clerics who presided at Cecco's trial charged him with

Figure 51. A Stargazer about to Stumble.
(Alciato [1531], sig. C7^{r})

demonic magic and irreligious determinism. He cited Hermes in his defense – according to the interrogators of this professor in his seventieth year – when he predicted the time of the Antichrist and attributed Christ's passion and death to the "necessity of the heavenly bodies and the power of celestial constellations." Hermes himself testifies that "the heavens are the cause of moral virtues and of everything."[2]

Far from Florence, nearly fifty years after this triple execution, another court sat in Constantinople's church of Hagia Sophia to hear testimony from one Phoudoulos about other dangerous writings in a trial about magic and medicine. Accused of having "unclean" books, Phoudoulos confessed and also named a physician, Syropoulos, as his supplier. Syropoulos led the court to another physician, Gabrielopoulos, whose home was searched and whole boxes of books discovered. One suspicious work was called *Kyranides*; another was a book of spells by Demetrios from one Phoudoulos Chloros, like Gabrielopoulos a cleric and physician. When Chloros claimed that his magic manuals were just medical books, other physicians cried outrage: Chloros disgraced the art of medicine, they bellowed, insulting their heroes, Hippocrates and Galen, by calling them magicians.[3]

What was so alarming about these books? The *Kyranides* might look like a crude but harmless natural history, listing plants, stones, and animals

under letters of the Greek alphabet. But it also puts such items together to make medicine: a hoopoe's heart, hair from a seal, green jasper, and peony root are items in one remedy of great value. Such things are natural ingredients for amulets and talismans, including the simple peony described in another Hermetic book as

> a sacred plant, revealed by God to Hermes Trismegistus as a remedy for mortals, … as noted in the holy books of Egypt. Whoever has some part of its root, if the unutterable names of God Most High are inscribed on it [with magic signs], need have no fear of demons.… He will drive out … any fever, … evil eye and malevolent power.… If you suffer from epilepsy and wear this root, … you will cure it beyond all expectation. For someone possessed by a demon, use it to make a fumigation.

Galen, uninterested in smoking out demons, had examined a boy relieved of epileptic seizures by a peony amulet. Since the line between medicine and magic was indistinct – even for a pagan like Galen – making cures out of natural objects could easily offend the guardians of Christian faith.[4]

Churchmen disliked Chloros and his books as much as the indignant physicians despised them. He had also chosen the wrong side in a theological dispute, joining the heretics who supported Rome against Byzantium. But Chloros was worse than a renegade: he not only read worldly works about medicine; he also wrote about the arts of Satan. He was the perfect victim for the time and place, where his learning – indiscriminately magical and medical – was risky business. Another person named in the indictment of Chloros was John Abramios, a scribe who was active when the Greek manuscripts behind modern editions of the Corpus Hermeticum were written in Byzantium. These texts have been called 'Hermetic' ever since colleagues of Abramios convinced Renaissance scholars that their author was the primeval Hermes. Byzantine scribes had already sensed the division in Hermetic writings that scholars now call *technical* and *theoretical*. The latter survive in the Latin *Asclepius* and the Greek treatises that became Ficino's *Pimander*. Their content is spirituality – pious speculation and exhortation about God, the cosmos, and the human condition: these theoretical Hermetica do not theorize about magic.[5]

Had Byzantine scribes like Abramios not copied the theoretical Hermetica, Ficino would have had nothing to translate, and our evidence of the Greek originals would be only fragmentary. Yet the forces behind this labor were smaller than those that drove interest in the technical works – scores of texts on alchemy, astrology, astronomy, botany, magic,

Figure 52. A Demon Torments a Saint.
(Boaistuau [1567], fol. 44r)

medicine, pharmacy, and other practical topics. Like the theoretical tracts, the technical writings are attributed to Hermes and his companions. In various languages, including Arabic and Latin, they circulated widely over the Mediterranean area in late antiquity and afterward. Unlike the Greek theoretical treatises, some were known in the medieval West. But Ficino's *Pimander* was still a momentous discovery, not only because its

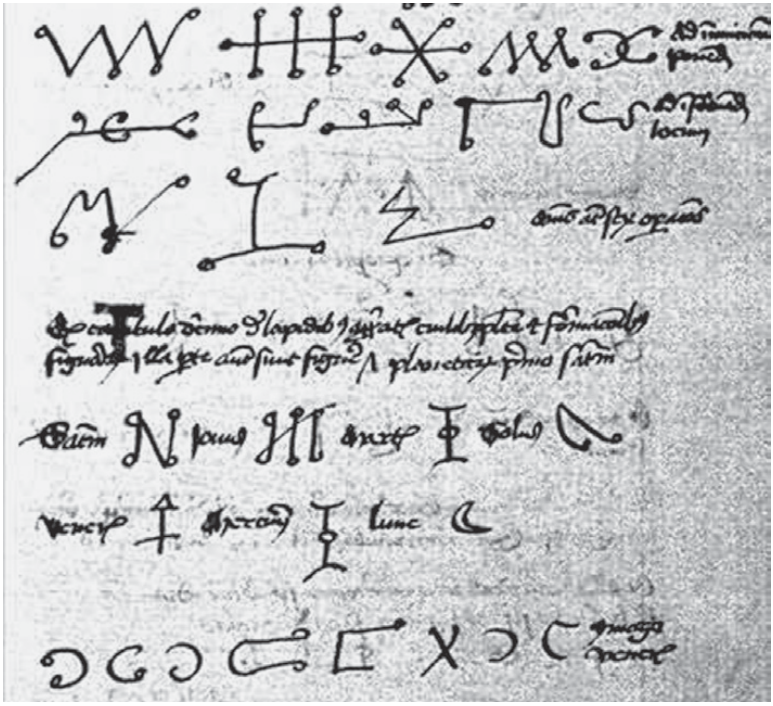


Figure 53. Picatrix: Signs for Talismans, Fifteenth Century.
(Vienna, Oesterreichische Nationalbibliothek, MS 3317 Han, fol. 133)

originals were Greek and hence high fashion in a classicist culture but also because their content was pious spirituality, not disreputable magic.[6]

How horrifying the technical Hermetica seemed to some medieval Christians, and how enticing to others, is clear from the trial of Chloros. Yet Abramios, entangled by the same events, was still copying not only standard medical works but also technical Hermetica years after the trial – after the court had denounced the *Kyranides* and similar works on astrology and botany as "notoriously impious." One codex containing those hated writings went to Venice, while another copied by Abramios came to Florence, to rest alongside the Greek manuscript of theoretical Hermetica that Ficino used. In the Florence manuscript, Abramios copied *The Sacred Book of Hermes to Asclepius*, and this is its introduction:

> Below I have laid out for you the shapes and figures of the thirty-six decans that belong to the zodiacal signs, and I have indicated how each must be carved and worn as among the horoscope, the good demon

> and the place of its effectiveness. If you do this and wear it, you will possess a mighty amulet, … honoring each decan by its stone, plant and shape.

These are instructions for a magic of astral gods who are to be enticed by talismans long since condemned by the Church – the demonic magic, in other words, that Ficino tried so hard to avoid by finding philosophical foundations for a natural magic that would be harmless to religion. The decans – described in the *Picatrix*, a work that Ficino knew but feared to name – are old Egyptian star-gods, mutated over the millennia into the weird, now ruined shapes painted by 1470 on the walls of the Este palace of Schifanoia in Ferrara.[7]

2 GIOVANNI MERCURIO

Shortly before the Schifanoia murals were made, Lodovico Lazzarelli went to Venice to learn Greek. He was not yet twenty – born in 1447 to an educated family of San Severino Marche, about halfway between Foligno and Ancona. Working first as a private tutor, he soon came to think of himself as a poet. His early literary productions include an oration delivered before the Emperor, Frederick III, as well as verse about Prometheus and a tournament in Padua. These juvenile efforts led to greater things: *Images of the Pagan Gods* and *Festivals of the Christian Religion* – one longish and one monumental poem on religious topics that Lazzarelli completed (but did not finish) by the early 1470s. He then moved to Rome to serve a Venetian prelate, Lorenzo Zane, and made contact with Pomponio Leto's Academy. Leto's club for Roman notables had survived its troubles with Pope Paul II and was now less interested in pagan rites than in Christian liturgy.[8]

Lazzarelli's journey to Rome was well timed: the local culture had turned hospitable to works like his *Festivals*, a syncretized *Fasti* regularly revised to improve its Christianizing of Ovid's pagan calendar. The revisions complicate Lazzarelli's story, however: although the poem mentions Hermes Trismegistus and uses Hermetic terminology, an unstable text makes the dating of these items uncertain. Ficino finished his *Pimander* in 1463 and published it in 1471. But when did Lazzarelli read it? Surely by 1483, two years *after* he first met Giovanni Mercurio – John Mercury. But when did Lazzarelli introduce Giovanni to his ancient namesake – or the reverse?

Lazzarelli's first encounter with Giovanni in 1481 changed his life. In the pseudonymous *Letter of Enoch*, which records everything known

about Giovanni's exploits in Rome, Lazzarelli writes that "I first followed him right on to Mount Zion, having left the slopes of Parnassus and all else behind." The scene that Lazzarelli claims to have witnessed was memorable, though not without precedent in the capital of Christendom. While the cardinals were in consistory, Giovanni arrived at the papal palace brandishing a sign of apocalypse, a Bible with seven seals, introduced by a warning to repent and by a shocking appropriation of biblical authority. The most provocative feature of Giovanni's (possibly) Joachimite 'eternal Gospel' is its announcement that "this is my most beloved son Mercurius, in whom I too have been pleased as he grows"– echoing the sacred words of the New Testament in which God gives his blessing and authority to Jesus.[9]

At a time when judges denounced books written in the name of Hermes as proof of capital crimes, this prophet replaced the Christian God's most sacred name with his own – Mercurius – taken from a pagan god.

But this is all we hear about Mercurius or Hermes: the rest of Giovanni's message – and Lazzarelli's gloss – is biblical, not Hermetic. How much the prophet or his disciple knew about the Hermetica in 1481, and who taught what to whom, remains unclear. 1482 is the earliest secure date for Lazzarelli's presentation of Latinized Hermetic texts to Giovanni: not just Ficino's *Pimander* and the *Asclepius* but also Lazzarelli's own Latin versions (not yet published) of three Greek treatises that Ficino had not translated. Although Giovanni seems to have been drawn to the Hermetica by their apocalyptic content, Lazzarelli was looking for spiritual rebirth. Neither was hunting for magic – yet.

Between the winter of 1481 and the spring of 1484, Giovanni's trail vanishes. Then his career as a Hermetic evangelist peaks on April 11, 1484 – Palm Sunday, the great festival commemorating the messianic entry of Jesus into Jerusalem. Although details of Giovanni's performance as the Messiah come only from Lazzarelli's *Letter of Enoch*, an independent chronicle confirms the bare facts of that bizarre day.

In the fuller account by Lazzarelli, Giovanni processes and preaches all the way from St. John Lateran to the Vatican by way of the Campo de' Fiori (where a somber statue of Giordano Bruno, the martyred Hermetist, now presides). He goes on horseback, accompanied by four servants, and the whole troupe is dressed to impress. He proclaims that he is "Pimander, Angel of Wisdom." After changes of costume and props, surrounded by crowds waving palms, Giovanni re-enters, no longer Christ triumphant but the Man of Sorrows, wearing a bloodied robe,

Figure 54. The Man of Sorrows, c. 1475.
(Art Institute of Chicago, Clarence Buckingham Collection, 1944.172, Schreiber II.862b)

holding a reed, and capped with a crown of thorns decorated with a silver crescent. He has also traded his horse for an ass that carries him to the portal of St. Peter's, where he sheds his theatrical trappings and leaves his eternal gospel on the high altar.[10]

Which scenes of messianic melodrama did Giovanni's Roman audience actually witness in 1484? The independent chronicle says little. After depositing his revelations at the Vatican, Giovanni seems to have stayed in Rome for a while before returning home to the Emilia-Romagna. Abraham ben Mordechai Farissol, a learned Jew and a contemporary, remembers him as sharing the "views of prophecy advanced by Maimonides." Farissol also describes Giovanni as charismatic enough to escape the hostility that he provoked. By 1486 he had come to Florence, where he was interrogated and attacked as a false prophet and a pederast. By this time Lazzarelli was safe in Naples, working for King Ferdinand. He persuaded Ferdinand to ask Lorenzo de' Medici to have Giovanni released.

After Florence the record goes blank again, but by 1492 Giovanni was in Rome and still drawing crowds. Even though his act had bombed in Tuscany, he may have returned there in 1494, then to Venice in 1497, before going again to Rome from Milan in 1499, with a large household trailing him. Although he was still called Mercurio, claiming to be Christ was no longer his main pitch. His new material was more magical and alchemical than Hermetic, and he finally broke into print, publishing a sonnet and a hair-raising sermon about the Last Days.[11]

In 1501, Giovanni's reputation in alchemy, magic, and medicine attracted the attention of Louis XII of France – or maybe it was the costuming and the props. According to Trithemius, Giovanni dressed up again, brandishing a scimitar and shield, and mounted a donkey to give a Latin speech in the King's presence, claiming "to be the son of God." One of the King's retinue was probably Symphorien Champier, a Lyonnais physician who had been studying the magical cures that attracted Louis to Giovanni. It was also Champier who finally published Lazzarelli's translations of three Hermetic discourses in 1507, spreading the word in France about the thrice-greatest Hermes.

Giovanni's speech in Lyon was probably his *Exhortations*, urging Europe's princes and prelates to go crusading again. A treatise *Against the Plague* from the same period addresses residents of Rome, indicating that the plague prophet went back to the holy city, where the market for alchemical remedies would have been lucrative. As Marlowe's Faustus would say, "tis magic, magic that hath ravished me," but Giovanni's magic was now mainly alchemical – and mercenary. Pope Julius II could easily afford an alchemist, and Giovanni was still in Rome in 1503, giving us a last look at this peddler of nostrums who had failed as a messiah.[12]

3 A MIXING BOWL

Lazzarelli's brother wrote a biography of his famous relative that fails to mention Giovanni. Perhaps the new Hermes embarrassed the family. In fact, this domestic memoir has little to say about its subject's life after 1484, the year of the Roman extravaganza, when Lazzarelli's story recedes into a fog of hagiography. We are told about his major work, the *Crater Hermetis*, but nothing about the flamboyantly Hermetic contents of this *Mixing Bowl*. Although his brother may have disapproved, Lazzarelli himself was sure that his first meeting with Giovanni in 1481 was his big break. So taken was he by reading the Hermetica in a biblical context "that all other writings … make me sick."[13]

He tells us this in the first of three *Prefaces* written to accompany the Hermetic texts that he gave Giovanni in 1482. The first *Preface* presents Ficino's *Pimander*. The second introduces the *Asclepius*, assuring Giovanni in verse that he deserves his Hermetic name and "may teach even mightier lessens." The third precedes Lazzarelli's original and literal Latin versions of the three Greek Hermetica that Ficino did not translate. His thinking at this stage is still just biblical and Hermetic: direct influence at this time from Kabbalah is unlikely, though not impossible.[14]

In the summer after Giovanni's Palm Sunday parade in 1484, Sixtus IV died, Lazzarelli exited the holy city, and a new pope took the tiara – the Innocent VIII whose papal letter of 1484 would bless the *Hammer of Witches* in 1487; the same pope condemned Giovanni Pico's *Conclusions*. By 1486, Lazzarelli was probably teaching privately in Naples. Spiritual healing, despite the risk of complaints about sorcery, was a money-maker: even a poet needs to eat. Anxious because his *Fasti* had not attracted a wealthy local patron, King Ferrante, the hungry reformer looked for a way back from Zion to Parnassus, but his path ran through strange terrain – the silkworm industry.

De bombyce, the result of Lazzarelli's entomological inquiries, must surely be the best poem ever written about silkworms, which Basil of Caesarea had described in prose long before. Mainly worm lore, lightly allegorized, these didactic verses are the only thing Lazzarelli wrote that was published in his lifetime. Contemplating the worm's silky metamorphosis, he turns the little bug into an emblem of immortality. Since spiritual regeneration is also a Hermetic motif, immortality links *De bombyce* with Lazzarelli's much more serious *Crater*: if lowly worms regenerate, can sinful humans do less? The *Crater* probably dates to 1492–4 and is no earlier than 1486.[15]

At the beginning of that period, Giovanni Pico was reading Kabbalah and writing his ill-fated *900 Conclusions*. It was also in 1486 that Mercurio's road-show folded in Florence. Did Pico or Ficino notice? No evidence tells us so, though the messiah would have been hard to miss, judging by Lazzarelli's account. What is certain is that in 1489 – when the *Crater* was probably not yet written – Ficino published his *Three Books on Life,* with its worries about the god-making of the *Asclepius*.

Was Lazzarelli motivated by *De vita 3* to improve on Ficino's handling of the *Asclepius*? The great Platonist had translated Greek Hermetica when Lazzarelli was still a boy: what finer victory than to surpass a living master of Hermetism and Hellenism? But if Lazzarelli was alert to the Hermetic material in Ficino's *De vita* of 1489, he surely could have known

about the 119 Kabbalist theses that Pico published in his *Conclusions* of 1486. Although the account of Kabbalah in Pico's *Oration* was printed only ten years later, two years after the young Prince died, there was plenty of Kabbalah to speculate about in the published *Conclusions* and in Pico's subsequent *Apology*.[16]

But Pico allots just ten of his 900 theses to Mercurius, giving him much less attention than he gave to Kabbalah. Since the *Crater* mixes Kabbalist with Hermetic wisdom, however, Pico's Hermetic conclusions may be more important than their number suggests. All ten come nearly verbatim from Ficino's *Pimander* and from only two of the discourses, the twelfth and thirteenth:

1. There is soul wherever there is life; there is mind wherever there is soul.
2. Everything moved is corporeal; every mover is incorporeal.
3. Soul is in body, mind is in soul, the Word is in mind, and God is their father.
4. God surrounds and permeates everything; mind surrounds soul, soul surrounds air, and air surrounds matter.
5. Nothing in the world does not share in life.
6. There is nothing in the universe that suffers death or corruption. Corollary: Life is everywhere; providence is everywhere; immortality is everywhere.
7. God warns man about things to come in six ways: through dreams, omens, birds, entrails, inspiration, and the Sibyl.
8. The true is what is untroubled, unlimited, colorless, figureless, unshaken, naked, clear, self-apprehendable, unchangeably good, and completely incorporeal.
9. Within everyone are ten tormentors: ignorance, grief, inconsistency, lust, injustice, extravagance, deceit, envy, fraud, anger, recklessness, malice.
10. The ten tormentors described in the previous conclusion according to Mercury, as one who thinks deeply about it will see, correspond to the evil grouping of ten in Kabbalah with its governors, of whom I have had nothing to say in the Kabbalist conclusions because it is a secret.

Six of Pico's Hermetic theses are about Lazzarelli's main topic, the nature and destiny of the soul, for which regeneration is possible because "there is nothing in the universe that suffers death or corruption; … immortality is everywhere." Regeneration is the theme of *Discourse* 13, one of the

two tracts from which Pico took his theses. The tenth and final thesis uses Kabbalah to interpret the Hermetic Gospel: finding twelve (zodiacal) tormentors in the Greek text and in Ficino's *Pimander*, Pico compresses them into ten, the number needed to match (a) the ten types of truth in his eighth thesis, (b) his ten theses in total but (c) mainly the ten *Sefirot* – God's attributes or emanations – which have a dark counterpart, an "evil grouping of ten," to explain the malice of the tormentors. The details of the Hermetic puzzle that Pico solves with this "secret" of Kabbalah are less important than the fact that he did so when and where Lazzarelli could have seen what he did.[17]

In similar circumstances, Lazzarelli makes the same move: a secret of Kabbalah is the hermeneutic, the object text is a Hermetic secret. Passages like his account of the trees of Eden (described later) are virtuoso emulations of Midrash: that Lazzarelli did this on his own, without help from learned Jews or rabbinical and Kabbalist literature, is improbable. Because he and Pico had so much in common – chronologically, circumstantially, and intellectually – he may well have known about Pico's Kabbalah. He knew about Yohanan Alemanno, Pico's teacher, and he had sources as arcane as Abraham Abulafia and Eleazar of Worms, both used by Pico. The Prince himself would have been irresistible to him.[18] And notice this passage from the *Crater*:

> The masters of the Hebrews say that Enoch in a certain book of his made mention of a higher and a lower king – and one who would unite them both for gladness to be ordered from on high every day. This, in my view, is nothing less than the secret of this mystery.

These words raise a question: considering the context, just before Lazzarelli mentions the *Book of Formation* (*Sefer Yetzirah*) that generated so much Kabbalist theosophy, is it not likely that "a higher and a lower king" are the Crown (*Keter*) and the Kingdom (*Malkhut*), first and last of the ten *Sefirot*, and that the "one who would unite them both" is the sixth and central *Sefirah* – Beauty, *Tiferet* – commonly identified with Christ by Christian Kabbalists? Is *Tiferet* "the secret of this mystery"? As Christ and *Tiferet* organize the "gladness from on high," their sublime government will sustain the reborn human who becomes them both in spirit. Was Giovanni Mercurio, who called himself Jesus, also the new *Tiferet* as well as the new Hermes?

Such audacity is commonplace in Abulafian Kabbalah and thus within range of the Kabbalist theses written by Pico, who thinks of the ten *Sefirot* as two Trinities, a higher and a lower – not just the three uppermost

Sefirot but also a group that reaches down from *Keter*, the first *Sefirah*, through *Tiferet*, the sixth, and below to *Malkhut*, the tenth, where the highest divinity makes contact with lower worlds, including the one that humans inhabit. Since Lazzarelli thought that human self-knowledge is divine only if it is trinitarian, Pico's Kabbalist trinities, informed by Abulafia's mysticism, will have been the perfect platform for his mystery of regeneration.[19]

The *Crater* is Lazzarelli's exposition of that mystery. Its full title is *A Dialogue on the Supreme Dignity of Man, Entitled the Way of Christ and the Mixing Bowl of Hermes*. *Mixing Bowl* – *Kratêr* in Greek – is also the title of *Logos* 4, where Hermes teaches Tat to be baptized by the waters that God has blended with the saving power of Mind. Quotations from this and other Hermetica are frequent in Lazzarelli's *Crater*. Particularly important are the sixteenth, seventeenth, and eighteenth discourses, not only because Lazzarelli himself Latinized them but also because they gave him a genre and a form for his *Crater*, as both a royal panegyric (*Discourse* 18) and, perhaps imprudently, a dialogue in which a king is also a pupil (*Discourses* 16 and 17). But the real Hermetic key to Lazzarelli's enigmas is the *Asclepius*, which had been read in Europe for centuries.[20]

The voices in the *Crater* are a king, a poet, and "a son of true wisdom who sends greetings, peace and thanks to Giovanni Mercurio." The greetings come from "Lodovico Enoch Lazzarelli," of course, not just pseudonymously as in the *Letter of Enoch*. His eminent interlocutors are Giovanni Pontano, the Neapolitan poet-astrologer, and Ferdinand I of Aragon, Naples, and Sicily, who died in 1494, two years after he and Isabella of Castile had sent Columbus looking for the Indies. Though many roads might lead from this suggestive setting, the *Crater*'s route is distinctly Hermetic and also original. Lazzarelli was not just imitating Pontano's poetry or even older models, like the *Consolation* of Boethius.[21]

The *Crater* divides into twelve sections of prose punctuated by five hymns – a literary form reminiscent of Boethius, but very loosely. The preaching starts with the spirit distraught and confused, needing help that must come from heaven and Pimander, a Hermetic Christ, who will occupy the soul that wants to be saved. The way to salvation is not through philosophy, the useless wisdom of the Greeks, but through the wonder-working speech of the older Egyptians. The Egyptian Hermes is the fountainhead of all the ancient theology that descended eventually to Plato – who has no large share of Lazzarelli's primordial wisdom. Although the Delphic (and Socratic) command to "know yourself" is

vital to spiritual progress, self-knowledge must be preceded by prayer, as in the first of the *Crater*'s five hymns.[22]

Since self-knowing sinners must meditate on their sins, the king wants to know about the first sin and the setting for it, beneath the two trees of Eden. Lazzarelli's answer is an allegory. The tree of life is divine knowledge, while the tree of the knowledge of good and evil represents merely material understanding. Worse, the second tree stands for claims that worldly knowledge is the only kind, thus eliminating any hope of ascent from earthly experience to heavenly wisdom.

As he looks in the trees for meaning, Lazzarelli introduces his main hermeneutic principle: explaining one of a pair of contraries also explains the other. With this rule established, he turns to Proverbs and related texts from Ezekiel, Psalms, and elsewhere, trying to decipher the "stupid and noisy woman," "stolen waters," and "concealed bread." The result is a complex set of analogies that sort pairs of biblical terms under the headings of wisdom and folly, which are opposed in the same way that the two trees of Paradise are opposites.[23]

Lazzarelli's interpretations of scripture, tours de force of Midrashic exegesis, require that theological truths embrace poetic myths, meaning that true poets deal in symbols, not fables, and that ancient poetic wisdom has a biblical base. Accordingly, he identifies the "angels" who have intercourse with the "daughters of men" in Genesis with the demons in one of the god-making passages of the *Asclepius*. The righteous soul will not be seduced by these allegorized "allies of darkness," who embody the evil allurements of the senses. The saved soul will distinguish between two births: one, symbolized by angelic fornication with human women, is selfish and material; the other is the true "giving birth for God." Humans inevitably lost this saving knowledge after the Fall because the incarnate soul was immortal only by divine grace. When "divinity withdrew" – as the old gods had once abandoned Egypt – the wages of sin was the death of human knowledge, and the result was sinful ignorance, calling for a "hymn of mourning," the *Crater*'s second hymn.[24]

At this point, part way through the *Crater*, Lazzarelli has shown that human knowledge of the self requires divine knowledge of God, for which merely human faculties are not enough. But God shared his own knowledge with humans. In the mystery of incarnation, the Word became flesh. All that fallen mortals truly understand, however, is the trinity of powers that God has infused into the soul. As Augustine had taught long before, since the structure of human psychology (memory, intelligence, and will) reflects the metaphysical partitions of the Trinity, knowing the

triune God is knowing oneself, a creature made in the Creator's triadic image. The third hymn of the *Crater* contemplates the "true man" that is God.[25]

Knowledge of God is love of God, of the holy fecundity that begets divine progeny, not the deformed material offspring of the lustful angels of Genesis. The *Crater* responds with a fourth hymn on divine generation and by allegorizing the god-making in the *Asclepius*, which Ficino had criticized in his *Three Books on Life* without grasping the spiritual message of Hermes. From the mind of the sage – a sage like Lazzarelli – will come the regenerated man, whose palingenesis calls up a fifth and final hymn of praise.[26]

The Hermetic content of the *Crater* is hard to miss, but only a dozen passages or so show signs of post-biblical Hebrew and Aramaic sources: the Talmud, *Mishneh Torah*, Enochic pseudepigrapha, unidentified *midrashim*, the *Book of Formation*, Eleazar of Worms, the *Zohar*, Alemanno (perhaps) and – most important – a follower of Abulafia or Abulafia himself. Where did this arcane learning come from? Was Pico, the patriarch of Christian Kabbalah, the ultimate source?

The strangest Kabbalah detectable in the *Crater* is the kind that means most to Lazzarelli: making the golem. In commentaries on the *Book of Formation*, Eleazar of Worms discusses the golem, an artificial human made of mud and activated by ritual, as a vehicle of spiritual regeneration. Is golem-making in the *Crater* like god-making – demonolatry, in Christian dogma – in the *Asclepius*? Or is Lazzarelli's regeneration no kind of theurgy at all, not a drawing-down of demons into material statues as in the *Asclepius*? Is the spirituality of the *Crater* too pure to be astral magic, let alone a demonic rite?[27]

Whether Lazzarelli was so high-minded is unclear, though a few years later he was certainly not shy of alchemy – no more than his master, Giovanni. Alchemy works on matter, but to transform it. The transformative alchemical work might be a prelude to spiritual regeneration, perhaps a more realistic goal than gold-making for some practitioners of the art. But what did the author of the *Crater* want? What riddle was he trying to solve? And what was his solution?[28]

Answers may be found in *The Life of the World to Come*, written by Abulafia in the late thirteenth century and possibly known to Lazzarelli. Abulafia spent his last years in Italy, and Lazzarelli may have been in touch with a distinctly Italian Kabbalah seeded centuries before by the mystic from Barcelona. A passage about soul-making from Abulafia's work – and from another derivative text – suggests a link with the *Crater*. The

Figure 55. Hermes the Alchemist.
(Maier [1617], p. 5)

same writings could have given Lazzarelli a formative idea: that there are two ways for the sage to deal with souls, one corporeal and idolatrous, the other spiritual and regenerating; one draws souls down into material receptacles, the other makes them anew. Hence, the idolatrous statuary of the *Asclepius* was not simply to be condemned – as Ficino had done. It must be disembodied, spiritualized, and sanctified, transforming demon worship into a "generating of souls" fit for Christians.[29]

4 LAZZARELLI THE HERMETIST

Seen in this way, Lazzarelli's views are not the astral magic that Walker attributed to him, and the fit is even worse for the story told by Yates about magic and Kabbalah in the Renaissance. The gist of her narrative is this: when Marsilio Ficino revived the Hermetica and Giovanni Pico added Kabbalah to the mix, they not only established (or re-established) a theory about the past – the ancient theology – they also created a progressive ideology for modern times. The magic feared by medieval

Catholics acquired not only the authority of classicism, because of magic's primeval origins; it also gained proto-scientific and pre-technological value, because magic *works* on the world rather than trying to escape it. There is much to criticize in this Faustian romanticism – and much to be praised in the many eloquent books that Dame Frances wrote – but she was surely wrong to marginalize Lazzarelli when writing about a tradition called 'Hermetic.'[30]

Lazzarelli said more about Hermes Trismegistus, and cared more about him, than either Ficino or Pico. If any Quattrocento thinkers ought to be called 'Hermetic,' Lazzarelli is front and center among them. But Lazzarelli – granted his interest in alchemy and spiritual healing, which was probably pragmatic and commercial – did not theorize about *working* on the world *magically*: he theorized about *transcending* it *spiritually*. Like alchemy, the natural magic certified by Ficino and Pico – as well as the god-making of the *Asclepius* – starts by manipulating natural objects, things made of matter. For Pico and Ficino, in fact, a *legitimate* natural magic should *stop* with material objects because the alternative – rising higher into the immaterial and possibly demonic realm – risks sinning against religion. But ascending to God was Lazzarelli's aim, and natural magic was not his ticket for that supercelestial voyage.

Yates was wrong not just about Pico, Ficino, and Lazzarelli, as important as that may be, but also about something larger and deeply lodged in current scholarship: her application of the term 'Hermetic' to the culture of post-medieval Europe. That there was such a thing as Yates's 'Hermetic tradition' in the Renaissance is a creed that attracts new believers every year because so many people still read her powerfully written and constantly reprinted *Giordano Bruno*. But that view is at least a distortion, if not an illusion.

The original and deeper distortion was not Yates's mistaken grand narrative – or even Eugenio Garin's earlier, and also misleading, picture of Renaissance culture as a new *regnum hominis*, an untranscendental kingdom of man: the seminal error was inspired by Kant. The Baconian 'kingdom of man' anticipates a key phrase of Kant's moral philosophy, the 'kingdom of ends' where the moral law guides all human action. That powerful idea, with related Kantian notions like the 'dignity of man,' entered Renaissance historiography in the 1790s, when Jacob Brucker's earlier *Critical History of Philosophy* had to be restated in Kantian terminology. In succeeding decades, the results were reshaped again by Hegel, a master of history, and they kept evolving through the early twentieth century.[31]

Before World War I, these post-Kantian and post-Hegelian doctrines passed on to two distinguished philosophers who were also influential historians: Ernst Cassirer and Giovanni Gentile. For the neo-Kantian Cassirer – later assisted by Paul Kristeller, another devout Kantian – to turn Giovanni Pico into a proto-Kant was entirely natural because Cassirer saw the goal of history itself as a Kantian ideal. Although Gentile's thinking was more Hegelian than Kantian, his own grand narrative of Italian thought – still basically intact – has many Kantian elements, not least of all the *regnum hominis* that he put at the center of Renaissance moral and political philosophy. Gentile was a fervent idealist, but his 'actual idealism' is a philosophy of the *immanent* spirit, meaning that the spirit does not *transcend* the world. A true cosmic polity, therefore, a *regnum hominis*, must be a kingdom of *this* world.

A consequence of Gentile's ideology was to miscast Giovanni Pico, an ascetic Christian mystic, as the herald of human freedom and dignity, in post-Kantian and post-Hegelian terms as Gentile understood them. That picture of Pico was canonized in 1937 by Garin, around the time that Kristeller was in Italy working on Lazzarelli. After World War II, Garin's Pico entered the American university textbook market, which greatly amplified the effect. Garin's is still the canonical view of Pico and just as mistaken as Yate's marginalization of Lazzarelli and misunderstanding of Hermetism. The root error transposes post-Kantian values to the pre-Kantian world of Pico, Ficino, and Lazzarelli. In that bygone era of Christian spirituality, Lazzarelli's allegorizing and spiritualizing of the Hermetica made good sense. The Hermetica themselves are even more remote from Kant, however, and Lazzarelli's reading of them as a *spirituality to save the soul*, not as *magic to work on the world*, makes better sense than the magical 'Hermetic tradition' conjured up by Garin and levitated by Yates.[32]

A Dialogue on the Supreme Dignity of Man, Entitled the Way of Christ and the Mixing Bowl of Hermes is the *Crater*'s full title, as already mentioned. Intoning that pregnant phrase, the "dignity of man," Lazzarelli aligns mankind's worth with "the way of Christ." Valuing humanity in that way is heteronomous, in Kantian terms: a godlike dignity does not belong to earthbound humans, who must slough off their shells of flesh to win that prize by emulating the God/Man on high: real dignity lies *beyond* the starry skies; there is no moral law *within* the crooked human timber. The *Crater*'s Hermetic gospel, in other words, makes human dignity transcendent and otherworldly, not to be realized in an earthly kingdom of ends, in a *regnum hominis* here and now. Since Pico

himself did not say that his celebrated *Oration* was about the 'dignity of man' (later editors added the phrase), and since his speech advocates an ascetic mysticism that Lazzarelli would have applauded, perhaps we should consult Lazzarelli to appreciate how later readers of the *Oration* have misunderstood it.[33]

PART IV

MAGIC REVIVED AND REJECTED

CHAPTER ELEVEN

HOW TO DO MAGIC, AND WHY

1 MAGIC AND MODERNITY

> … what drugs, what charms,
> what conjuration, and what mighty magic.[1]

"Among the sons of modern Europe the first-born was the Italian," according to Jacob Burckhardt. Prompting that declaration were Machiavelli's statecraft and Cesare Borgia's crimes but also Petrarch's poetry, Bruni's history, Leonardo's painting, Michelangelo's sculpture, Valla's philology, and the universal genius of Leon Battista Alberti. In that Renaissance, where does Marsilio Ficino's magic fit – the magic of "Ficino the Philosophaster," as Thorndike called him? Near the end of Burckhardt's life, Frazer had canonized the now obsolete anthropology that still colors ordinary notions of magic, treating it as characteristically primitive. That was still the assumption when a standard work of reference recently named only "the Ojibwa Indian of North America," "the aborigines of Australia," and "certain African tribesmen" as users of magic – no Europeans need apply.[2]

Frazer, a professor of classics, knew better. He inherited his erudition from the classical scholarship developed and accumulated since the fifteenth century when Poliziano, Ficino, and their contemporaries invented it. Ficino's epochal achievement in this sphere was to put all of Plato for the first time into a language (Latin) readable in Western Europe. But when Ficino died in 1499, he left writings that were authoritative not only for philosophy and philology but also for magic. Was Ficino's magic primitive? If the Italian Renaissance was the dawn of modern Europe, was one of Italy's luminaries still in the dark about magic?

Faustus, just after the opening of Christopher Marlowe's tense drama, paces in his study, ready to help us answer such questions. Disillusioned

by the classroom, rejecting even theology, Faustus turns to "these metaphysics of magicians" to find what he wants:

> O, what a world of profit and delight,
> Of power, of honor, of omnipotence
> Is promised to the studious artisan! …
> A sound magician is a mighty god.[3]

Like Ficino's magic, the art that entices Faustus is studious and needs a metaphysics. Magic also promises power, even godlike omnipotence, and therein lies its modernity. Adepts in the magic of the Renaissance, making their Faustian bargains, will mutate into virtuosos of the Scientific Revolution. Flames of primeval power will heat the modern machines, and magic will have stoked the fires. But things ended terribly for Faustus – in the black ovens of hell. His faults went deeper than he knew. And like Faustus we may be seduced – by the romance of magic that his tragedy has implied.

After Ficino published them in 1489, his *Three Books on Life* had great success. Nearly thirty editions by 1647 made *De vita* enormously influential – a monument of Renaissance culture: like other works of that period, it revives ancient wisdom, the magical learning of ancient Greece, and, so Ficino thought, older revelations from Persia and Egypt. But *De vita* applies this primordial knowledge to problems of Ficino's time, showing his contemporaries how to use ordinary natural objects to better themselves in extraordinary ways. Ficino's philosophical magic means to give people power. But how? And does that purpose make it modern? To answer such questions, a closer look at Ficino's book will help.[4]

2 PHILOSOPHY, PHYSIOLOGY, AND MEDICINE

> If this be magic, let it be an art
> lawful as eating.[5]

A. Medicine for the Melancholy

"Plotinus the philosopher, our contemporary, seemed ashamed of being in the body." That stunning proclamation of ascetic immaterialism opens the *Life* of Plotinus, the first Neoplatonic philosopher, written by Porphyry, his student and successor. Ficino, the last great voice of this tradition, learned to think about magic from the Neoplatonists, sharing

their goal of rising beyond the merely physical and temporal to the bodiless and eternal. But Ficino the philosopher and priest also practiced medicine and theorized about it, requiring him not only to see and listen to diseased and aging bodies but even to smell, touch, and taste them, using all his five senses to diagnose their ailments.[6]

The illnesses that Ficino treated were natural particulars, concrete things, and so were the cures that he used to heal them. Natural objects – people, animals, plants, and stones – are also the main business of Aristotelian natural philosophy, which analyzes them as form and matter; substance and accident; cause and effect; power, quality, and property. Like the ancient Neoplatonists, Ficino assimilates Aristotelian physics and metaphysics and adapts them to Platonic purposes. As for problems of healing, applying scholastic philosophy to medicine had long been standard practice, especially in Italy's great medical schools of Bologna and Padua.

But Ficino learned his academic medicine at home, in the small University of Florence. After repeated closures of Florence's tiny medical faculty, the Medici transferred most medical teaching to Pisa in 1473. By that time, the young Ficino was one of perhaps three dozen doctors serving a city of about 40,000 souls – and bodies. The scarcity of learned healers gave him more clinical business than his sketchy education justified. Much medical knowledge came from outside the classroom, however, through apprenticeship, professional consultation, and personal experience. Ficino learned in this way from his father, a physician employed by the Medici.[7]

The junior Ficino, practicing a bodily art in a world of matter, became fond of the natural objects called *myrobalans* (Figure 56), one of many material things prescribed by the *Three Books on Life*. Myrobalans are uncommon but natural, unlike some of the fictions that had long sustained belief in magic for educated Europeans: the basilisk, the ship-stopper, and other magical items whose only reality was textual. The ancient Greek word, *murobalanos*, probably did not name the drug that Ficino describes in three varieties – emblic, chebulic, or Indic and belleric – corresponding to the dried fruits of trees native to south and southeast Asia, fruits still used in traditional medicine: *Emblica officinalis, Terminalia chebula*, and *Terminalia bellerica*. Rhazes, Avicenna, and other medical experts consulted by Ficino praised the composite drug, called *trifera*, made from all three fruits.[8]

Myrobalans appear often in the *Three Books on Life*, the third of which (*De vita 3*), called *How to Get Life from the Heavens*, presents a philosophical

Figure 56. Myrobalan, Terminalia Bellerica.
(Roxburgh [1795–1819], II, 198)

theory of magic along with practical advice. Because Ficino thinks of magic as a kind of medicine, it is no surprise that myrobalans are ingredients of magical drugs in *De vita 3*. They are fruits full of the quintessence, the unearthly substance located beyond the sphere of the Moon; the power of Jupiter and Mercury makes them a tonic for sensation, memory, and intelligence. These fruits are even more prominent in the first two of the *Three Books. On Treating People Constantly Involved in Study* (*De vita 1*) presents a large topic – regimen, diet, and drugs – to a small audience: professional scholars and their doctors, people like Ficino himself. The readership for the second book, *On Long Life* (*De vita 2*), was even smaller – scholars of a certain age, also like Ficino. When he published *De vita* in 1489, Ficino was almost fifty-six with ten years still to live, despite his bad horoscope with Saturn in an unfortunate position.[9]

Experience had taught Ficino that astringent myrobalans are good for the stomach, for the blood, and for a moist constitution. They protect against cold, putrefaction, sluggishness, and forgetfulness while promoting regularity, longevity, and intelligence. Since these fruits can be made into tasty confections, they are all the more practical as medicines. And because they are effective against melancholy, Ficino includes them in several prescriptions meant to cure that dread disease of the learned.[10]

To keep their minds healthy, scholars need healthy bodies. They depend not only on intelligence but also on brains, hearts, livers, stomachs, and,

above all, on 'spirit': in Ficino's usage, this is a tenuous but still material substance, "a pure vapor of blood, light, warm and clear," which is the product of a physical process. The stomach and liver receive food from which they make blood by a physical power (*virtus naturalis*). The lightest blood then passes to the heart and its vital power (*virtus vitalis*) to become spirit. Spirit travels next from the heart to the brain, which has the psychic power (*virtus animalis*) of moving and sensing. Because the matter of spirit is pure and fine, it can link those higher bodily functions with lower faculties of the immaterial soul.[11]

Although Ficino thought he was original in writing about the health of scholars, the clinical framework for all of his *Three Books on Life* is traditional – three types of therapy (regimen, pharmacy, and surgery) based on conventional humoral physiology. Less conventionally, however, magic also plays a large part. Yet Ficino's medicine is thoroughly natural, and so should be the magic in it. His magical medicine is *physica*, physic – the science known to Chaucer's "doctour of phisik"– the art and science of a *physicus* whose practice is explained by *natural* philosophy. Medicine of this kind acts on matter. Its operations are physical, not ritual or religious. Although the human patient is a body/soul composite, medical treatment by magic starts with the body, even though the body affects the soul and mind (and viceversa) by way of spirit.[12]

At the level of *physics*, the concept governing this medicine is physical temperament, the mixture – balanced or unbalanced – of material elements (fire, air, water, earth) and their qualities (hot, cold, wet, dry), the basic components and primitive features of all earthly things, including human bodies. There are many balanced temperaments or complexions, however, not just one; they differ by time, place, person, and bodily organ. In each case, some correct proportion of elemental ingredients will be healthy, but the blend will be unhealthy if it is out of balance.[13]

At the level of *physiology*, the same principle of balance governs the primary fluids that the body needs to live, eat, grow, reproduce, and stay healthy. These four *humors* are products of ingested food, but they also enable the body to take nourishment from what it eats and drinks. The same humors account for physiological complexion or temperament, the body's balance in health or imbalance in illness. The *blood* in the veins is mainly humoral blood, but it mixes with the three other humors: *phlegm*, a secretion coming mainly from the brain, like mucus in color and consistency; *yellow bile*, made by the liver and found in the gall bladder; and *black bile*, whose organ is the spleen.[14]

Scholars are vulnerable to special humoral afflictions – occupational diseases of the learned. Intense and prolonged mental activity produces black bile (*atrabilis*), also called *melancholia*, while physical inactivity generates phlegm (*pituita*). Phlegm makes scholars sluggish and depressed, but black bile causes anxiety or even insanity. Melancholics dry out and grow cold, losing warmth and moisture – the moisture that sustains natural warmth. Too much thinking dries the brain and chills it. Spirit made hyperactive by thinking also consumes the lightest part of the blood, leaving it heavy and viscous. Eating the wrong food and not exercising – in general, neglecting the body for the mind – makes the sedentary scholar, especially the philosopher, melancholic.[15]

This physiological calamity is what Ficino calls the "human" cause of melancholy, but he also names two other causes: "natural" and "celestial."

The *natural* cause is the withdrawn inwardness of deep and difficult thought, "when the mind must pull back from external to internal things, as if from a circumference to a center." This center is like earth, the lowest, inmost element, which itself is like black bile, cold and dry. And when the inward movement of the mind also rises toward higher powers, it becomes like the very highest planet, Saturn. Swinging from low to high and back while moving in and out forces a "constant ingathering, compression almost," and the result is melancholy.

The *celestial* cause of the same ailment flows from the planets Saturn and Mercury. To be active investigators, scholars need the agile Mercury, but they also need the constant Saturn to persevere in their inquiries and retain what they discover. This combination of planetary influences is cold and dry, a perfect vector for the disease of black bile. Right from the start, astrology is the key to Ficino's magical medicine and a source of remedies against melancholy.[16]

Diseases of black bile are overdetermined and complex. Their causes are several, and several kinds of melancholic humor underlie them. The natural kind is just "a denser and drier part of the blood," distinct from the four types of burned (*adustus*) melancholy, which are combustion products, either of natural melancholy or of the three other humors. All the burned melancholies are bad, agitating those who think for a living before plunging them into depression – a humoral version of bipolar mental illness. By contrast, natural melancholy usually nourishes wisdom and judgment – though not always. By itself, untempered by other humors, or in the wrong mix with them, natural melancholy runs to extremes, making scholars weak, torpid, anxious, feverish, or even mad.[17]

The aim of Ficino's physic is to produce the right mix of humors, a balanced complexion for scholars prone (like Ficino himself) to melancholy. The proper balance will be not an equal amount of each humor but a proportionate amount – four parts of humoral blood to one each of yellow and black bile, and the black bile must be very thin. The desired result is a composite of those three humors, with a fourth – a lighter type of phlegm – surrounding and flowing into it. This healthful blend, glowing purple and gold, produces spirits that are volatile, like fumes from grappa. The effect is a quick and lasting intelligence congruent with Mercury and Saturn – especially the persistent Saturn, highest of the planets and propitious for the divine philosophizing that invites us to escape the body altogether.[18]

B. Practicing Medicine

The therapy in *De vita 1* is mostly regimen and pharmacy, but Ficino's understanding of regimen is expansive. Such treatment includes not only the patient's diet but also the air she breathes, the sounds she hears, the sights and colors she sees, the clothes she wears, where she lives, and the people with whom she lives. Regimen also overlaps with pharmacy: drugs and foods are both consumed. Some of Ficino's therapies fall outside these two main classes: bleeding is the only surgical intervention; baths and massage would come under regimen; and Ficino also prescribes a kind of ethical psychotherapy.[19]

No sleep in the afternoon after a big meal; no sex on a full stomach; no hard thinking after eating without rest in between. Excessive intercourse, too much wine, bad food, and lack of sleep are special risks for anyone who lives the life of the mind. Bad regimen puts the humors out of balance and the patient out of alignment with the heavens. A scholar who sleeps late will miss the Sun with Mercury and Venus in the morning sky. The countervailing regimen is mostly common sense: mix work with relaxation; keep the senses stimulated and the body exercised; breathe clean air and stay warm; avoid cold, fatty, heavy foods; eat lightly, twice a day; and drink light wine.[20]

The theory behind this regimen is physiological: a good humoral complexion will keep the scholar warm and moist, making the spirit fit to do the vital work of linking mind and body. Accordingly, the purpose of Ficino's medications is to eliminate bad humors and restore balance among the good ones. The drugs he prescribes are mainly botanical, both simple and compound, though the latter sometimes include animal

and mineral ingredients. Such drugs may be taken in their natural state, like eating a piece of fruit, or they may be processed and compounded to make pills, potions, syrups, salves, and other preparations, preferably slow-acting, moist and warm. Their use will be indicated by characteristic symptoms: runny nose, weak vision, headache, forgetfulness, sleeplessness, and unpleasant sensations of taste.[21]

In the special case of melancholy, the pharmaceuticals that Ficino recommends provide warmth and moisture against this dry, cold ailment. These medications include pills to be taken with a syrup twice a year, in spring and fall. One pill, for delicate patients, is "golden or magical, partly imitating the Magi, partly my own invention, compounded under the influence of Jupiter and Venus to draw out phlegm, yellow bile and black bile, ... sharpening and brightening the spirits." The ingredients, blended with wine for processing, are gold dust or gold leaf, frankincense, myrrh, saffron, aloe, cinnamon, citron, balm, silk, ben, purple rose, red sandalwood, coral, and all three kinds of myrobalan.[22]

3 GERIATRICS, ASTROLOGY AND AMULETS

Thy natural magic and dire property.[23]

A. Disease and the Heavens

"Among physicians," wrote the learned Rhazes, "those are wise who agree that everything relating to times, air, waters, complexions and diseases is changed by the motions of the planets." In 1345, the planets were foreboding. Three conjunctions involving Mars, Jupiter, and Saturn, along with an eclipse of the Moon, occurred in March, leading many people to search the skies for the cause of the great pestilence that struck in 1347. This pandemic and later ones seized the attention of European physicians, who produced nearly 300 treatises on the plague by 1500. Ficino added his *Consilium against the Pestilence* to this library of plague books in 1481, writing that a

> toxic vapor condenses in the air, in more widespread plagues coming from harmful constellations – especially conjunctions of Mars with Saturn in the manlike signs and from eclipses of the luminaries, as in the present plague of 1478 and 1479 – causing great injury to people and places whose Ascendant is bad for those constellations, though in plagues of limited extent the toxin comes from bad winds and vapors, from lakes and swamps and from earthquakes.[24]

Bad stars and planets make bad air, which breeds plague: this was a common view of the Black Death and of subsequent visitations of that awful disease. A destructive configuration of planets and stars gave doctors and patients a general explanation of the countless deaths, while bad horoscopes and weak complexions distinguished the individual dead from the survivors. Such applications of astrology had been built into the theory and practice of Western medicine from the beginning. Astrology was a kind of divination, and so was medical prognostication, which not only recognized larger rhythms of climate and seasons but also noticed smaller details of personal nativities and chronologies of specific diseases – phases of illness tracked through favorable and critical days, keyed to cycles of the Moon and calculated numerologically.[25]

Plague struck Florence for the eleventh time in 1478, the year when Ficino's second great patron, Lorenzo de' Medici, survived assassination in the Pazzi conspiracy. "Lorenzo's good health is the first I would take care of," wrote Ficino in the prefatory letter to *De vita 1*. And it was Lorenzo who received the dedication of the whole work *On Life* from this priest and philosopher, who was also a physician with "two fathers, the medical Ficino and Cosimo de' Medici."[26]

The practical healer who published a vernacular plague book in 1481 was also thinking about melancholy scholars and their ills, writing the text that would become *De vita 1*. *De vita 2* waited eight years more. Ficino may have intended it to put *De vita 3*, the least traditional of the three books, in a more conventional therapeutic framework. Citations of the *Consilium against Pestilence* in the third book *On Life*, a more adventurous text on medical magic, show that astrology links all these works. The astral magic of *De vita 3* is continuous with the physical and physiological theories of *De vita* 1 and 2 and with clinical practices based on those theories.[27]

De vita 1 explains that scholars, needing bodies with brains as well as minds, require spirit to mediate between their material and immaterial faculties. The spirit needs a balanced humoral complexion, and when melancholia puts the humors out of balance, the cures work by restoring equilibrium. The therapy that Ficino recommends, based on this physiology and including the three customary parts of medicine – regimen, pharmacy, and surgery – is fortified by astrology. *De vita 1* prescribes conventional medicine for a special population – for scholars – and some of the prescriptions are astrological, all within the normal experience of Ficino's time and place.

B. Astrology for the Aged

The advice in *De vita 2* for older scholars is even more specialized, and there is also more astrology. Old age begins at forty-nine or fifty, says Ficino. Later, by age sixty-three or seventy, the body's vital moisture has dried up. Strong remedies are indicated. A dry old man should suck milk, stabilized with fennel, from a healthy, happy young girl when the Moon is waxing. He might even drink a little blood from the left arm of a young man, also happy and healthy, in the same phase of the Moon. Myrobalans are a less extravagant option: one of their several powers

> dries up excessive moisture in an amazing way and so prevents the hair from going grey; a second collects natural moisture and protects it against both decay and inflammation, thus prolonging life; a third concentrates, warms and strengthens the natural and psychic power and spirit with its astringent and aromatic force. From this anyone would think that the Tree of Life in Paradise might have been a myrobalan.

The theory justifying the use of this wonderful, rejuvenating fruit and of Ficino's more dramatic remedies comes, once again, from conventional physics and physiology.[28]

Life thrives on natural heat, fueled by the right blend of airy, oily moisture. If the brain and mind work too hard, however, and the mix of fuel becomes too thin, the body's matter dissolves from an excess of dry heat; too rich a mixture of wet fuel, on the other hand, will choke the body's functions with cold moisture when thinking grows sluggish. Many kinds of bad regimen can bring on suffocation or dissolution, but poor digestion is the usual cause. When food is too wet, cold, or hard, it goes undigested, giving the body no nourishment. Even worse, the undigested food putrefies, dampening and smothering natural heat.[29]

Proper nutrition and good digestion produce the balanced complexion that makes healthy blood warm, moist, and clear, not cold, dry, and cloudy. Just to stay alive, however, the body uses up its moisture, which must be replenished. But if the blood flows too fast, if the bowels are too loose, if the pores are open and sweating from too much sex or lack of sleep, then stress and anxiety or hunger and thirst will rob the blood of moisture. The elemental composition of healthy blood is airy rather than fiery or watery, but the air must be neither too thin nor too dense. An imbalance of dense blood inhibits the production of spirit, blocks the pores, and smothers heat. An imbalance of thin blood, on the other hand, destabilizes moisture and makes spirit too volatile, subject to dissolution.[30]

When the blood is too thick or too thin and spirit is deficient or volatile, moderation is the best therapy. Ficino therefore advises older scholars to use medicine and astrology to "construct for yourselves the temperament that nature did not provide." The right prescription of regimen and medication will restore balance to aging patients whose complexions have become unbalanced. How does Ficino know what to prescribe? By consulting medical authorities, other physicians, and his own experience. Of more than sixty authorities cited (others are used but not cited) in the *Three Books on Life*, more than half are ancient Greek or Latin texts, some of them medical. About a quarter are medieval, mostly Latin translations of medical texts written originally in Arabic or Hebrew. A few medical authorities are Italian physicians – medieval or Ficino's contemporaries.[31]

One point of consensus that Ficino discovered in the experts is that astrology is indispensable to the physician, a common view confirmed by Ficino's practice of his craft. Accordingly, we find astrological medicine throughout the *Three Books on Life* – but more in the second book than in the first and much more in the third. Some of the astrology in *De vita 2* is specific advice on preparing drugs or planning a regimen, and some of the prescriptions lay out the theory behind the instructions.

The theory in *De vita 2* introduces an old analogy between the human microcosm and the universal macrocosm that Ficino will repeat and expand in *De vita 3*. The analogy arises in a discussion of procreation, of which the old must be wary in both its forms – physical and mental, Venereal and Saturnine. Because Venus dissipates the spirit and Saturn suffocates it, the best course will be a mean between them – a therapeutic link with the Sun and Jupiter, which both move above Venus but below Saturn.[32]

But Mercury is the god whom Ficino introduces to warn his older patients against Saturn and Venus:

> Just as I have cautioned you to beware of crafty Venus with her charms of touch and taste, so you should be wary of Saturn and of taking the same delight in contemplative thought when it is more withdrawn and too persistent, for in that case Saturn often devours his own children.... She makes the body fertile, ... and, when the mind is pregnant with his seed, he forces it to give birth.... Keep using the reins of prudence to restrain the lust for either god's begetting.... Observe what Jupiter the just taught Pythagoras and Plato, to keep human life in a certain just proportion of soul and body, feeding each with its own foods ... , wine, mint, myrobalan, musk, amber, new ginger, frankincense, aloes, jacinth and stones or plants like them.

Ages	*Faculties*	*Planetary Gods*	*Pleasures*	*Site*
1	sense	Venus	touch	external
2	sense > reason	Venus	taste	external
3	sense = reason	Mercury	smell	external
4	sense < reason	Mercury	hearing	external
5	reason	Mercury	sight	external
		Mercury	imagination	internal
		Mercury	reason	internal

Figure 57. Pleasures and Planets.

The basis of the complaint – and of the remedy – is physical: the old must conserve the vital juices that Venus consumes, "gradually draining you through a hidden tube of some kind, begetting another thing and filling it with your fluids, until she leaves you spent on the ground like the old husk of a cicada."[33]

Venereal pleasures of touch and taste rank lowest among the seven that Ficino lists, pleasures experienced through the five external senses of the body and two internal faculties of the soul. Touch and taste belong to infancy and youth, the first two of five stages of life, dominated either by sense alone or by sense more than reason. In the last stages, the fourth and fifth, sensation has either bowed to reason or disappeared entirely, excluding Venus and making Mercury the better guide for the elderly.[34]

Venus exits the series of pleasures even earlier, in fact, when touch and taste in the first two ages give way to smell and hearing in the next two. What touch and taste might seem to have in common is contact, but in the ordinary psychology of Ficino's day what they share is the same *medium* – the flesh that makes contact with external objects and lies next to the world and the devil. Pleasures of smell and hearing are higher and safer, and their common medium is air, which is

> always and very easily influenced by qualities of things below and in the heavens … and converts us to its quality in a wondrous way – our spirit especially.… Indeed, the quality of this air is of the greatest importance for thinkers whose work depends mainly on spirit of the same kind, which is why choosing pure and luminous air, smells and music concerns them more than anyone else.

The old, who find solid food hard to digest, can take nourishment from vapors of wine, odors of food, even from the air itself, which is like spirit. Moreover, since sounds are heard through the same airy and spiritual

medium that carries vapors and odors, Ficino locates music in this same gradient of therapeutic pleasures – governed by Mercury.[35]

In *De vita 2*, Ficino moves casually from this astro-mythical theorizing to catalogs of pharmaceuticals. Like all the *Three Books on Life*, this one gives an abundance of practical advice – recipes, prescriptions, instructions, and shopping lists. Although plants outnumber other substances, gems and metals also appear. Gold is a favorite ingredient: along with silver, coral, electrum, and other precious stones and metals, it has the double property of temperately expanding and condensing the spirit while also brightening it. These minerals were formed deep within the earth by heavenly power, which stays with them and keeps them connected to the heavens.[36]

C. Risky Remedies

Myrobalans, whose astringency condenses the spirit, have the power of fruit from Paradise, but it was gold that the Magi gave to Christ. "All authorities recommend gold above everything else," Ficino claims, "as if it were the best tempered of all things and safest against decay, consecrated to the Sun because of brightness and to Jupiter for balance, so that it has an amazing ability to regulate natural heat with moisture and introduce solar and jovial power into the spirits and limbs."[37] Despite its marvelous properties, however, gold is hard, like all metals and gems. Special steps must be taken when introducing hard things into the body's soft tissues and fluids. Ficino prescribes gold leaf or gold dust cooked in wine with sugar and various plants "when the Moon is coming into Leo, Aries or Sagittarius under the aspect of the Sun and Jupiter."[38]

Such celestial configurations were thought to govern the body, especially in the order of time. Knowing that astrologers had discovered many planetary patterns of hours, days, and months, Ficino recommended such an arrangement to his older patients, applying the sequence of Moon (1), Mercury (2), Venus (3), Sun (4), Mars (5), Jupiter (6), and Saturn (7) to the first seven years of life and then repeating the sequence. Septenary years ruled from afar by Saturn will be dangerous because that planet is so remote from earthly affairs and because descending from so high up in one year, and down so low to the Moon in the next, will be abrupt. These climacteric years are just one of the hazards on which the old should consult an astrologer along with a physician "if you want to extend life into old age without its being broken off at any of these stages."

Aristotle, Galen, Ptolemy, and Pietro d'Abano all agree that fate fixes no term of life that cannot be adjusted by "the devices of astrology and

help from physicians." Hence, near the end of *De vita 2*, Ficino's advice is "to ask the doctors what diet suits you naturally and the astrologers what star favors your life. When this star is well situated, and the Moon with it, combine the ingredients that you have learned to be good for you.... Besides all this," he adds, "Ptolemy and other teachers of astronomy promise a long and prosperous life from certain images made from various stones and metals under a particular star."[39]

This new topic of astrological images is what leads Ficino to the last of his *Three Books on Life* and its daring exploration of talismanic and musical magic. The risks in discussing images, much less recommending them, were several: from tradition, ethics, and metaphysics. To grasp these dangers, we need a distinction among objects of three kinds: let us call them *stones* (*lapides, lapilli*), *amulets* (*amuleta, phylacteria*), and *talismans* (*imagines*), stipulating that the first are any small bits of hard mineral, the second undecorated stones (or other small objects) worn on the body, and the third amulets decorated with words or pictures.[40]

To be cured by a stone – a piece of crystalline salt, for example – Ficino's patient could consume it or wear it. Ingested as medicine, the stone would be an ordinary drug like any other, morally harmless. But the long tradition of Christian teaching since St. Augustine had registered strong suspicion of stones worn on the body. If a stone is not swallowed, how can it act on the body? Perhaps by contact or proximity or by a link with some other object, like a star or planet. Ficino prefers the last answer, of course, wishing to be "a magician most profound in his art and yet not damnable." But others saw demons lurking behind objects used by godless heathens to protect themselves from disease and devils. Even in all innocence and with the best intentions, wearing an amulet might invite a demon to invade the body of the person wearing it.[41]

If the dangers of amulets were obvious, carving words or images on a stone was surely even riskier. To whom are words on talismans addressed? Clearly, these special messages are not sent to living humans. And if talismans address God or angels or saints, they will need to be authorized by the church – like a public rite or a religious medal. Satan and his demons are the only other non-human persons who can receive messages. Suppose images without words decorate talismans? Even then, the question must be answered: images of whom or what and approved by whom? Images of the old gods, including planetary gods, are idolatrous, like statues in a pagan temple. Animal images may also be idols: beasts had been worshipped by the pagans.[42]

Hence, for the Christian doctrine that guided Ficino's conduct, amulets are bad and talismans worse. Natural philosophy and metaphysics might complicate these problems or, as Ficino hoped, resolve them. To what physical or metaphysical category does an *image* on a stone belong? Are there purely *natural* ways to make connections with stars and planets by using amulets or talismans? Since words communicate with other *persons*, who are the persons addressed by words engraved on a stone?

And what consequences follow from putting words in *songs*? For music and song are also therapies in the risky magical medicine of *De vita 2*. "You who want to lengthen life in the body should first of all refine the spirit," advised Ficino. "Enrich the blood with enriching foods for blood that is tempered and clear; always keep it warm with the best air; nourish it daily with sweet smells; and delight it with sounds and songs." Song is delightful, but also dangerous. Its words, like those of a hymn or a prayer, are spoken to someone. Who is that someone?[43]

Ficino will labor at those hard questions in *De vita 3*, having started the job in *De vita 1* and 2. These two books give not only a general account of the natural basis of astrological medicine but also specific information on metals and gems used as medicines, on astrological images that might be carved on them, and on songs that the ill and elderly might hear or sing to heal themselves.

4 ASTROLOGY, MAGIC, AND MEDICINE

This rough magic I here abjure.[44]

A. Platonic Theology

Ficino's aim in *De vita 3* is to show doctors and patients how to get life from the heavens. The principle that makes this goal practical is that "at the right times heavenly things can be attracted to humans through lower things that sympathize with those above." And behind this principle is another "Platonic statement" of theory, that "the structure of the universe is so interconnected that heavenly things exist on earth in an earthly condition and earthly things in turn exist in heaven at a heavenly level." Everywhere up and down the cosmic strata, like attracts like. We are not told the source of this Platonic wisdom, which is a tract on magic by Proclus, the last great Greek thinker in a tradition that Ficino traced back through an ancient theology to Zoroaster and Hermes Trismegistus. Proclus taught that natural forces of likeness (*homoiotês*) and sympathy

(*sumpatheia*) were enough to link heaven and earth magically, but he also said that the same forces enabled "the ancient sages to bring divine powers into the region of mortals."[45]

Ficino, Plato's translator, was the great pioneering Hellenist of his age. He also studied and Latinized works by the ancient Neoplatonists – Proclus, Synesius, Iamblichus, Porphyry, and their master, Plotinus – that had not been read in Western Europe for more than a millennium. In those venerable texts he found a view of reality that was appealing to him yet threatening to his Christian faith: that nature and supernature form a continuum. This notion was the paradoxical product of a philosophy so awed by God's transcendence that it produced thousands of pages of theology while trying not to talk about Divinity itself, the ineffable One. All space, both physical and metaphysical, between the One on high and Earth far below is full of lesser gods, who are always already there in the world of nature. The magician cannot conjure or command them, strictly speaking, and has no need to try. He need only find or rearrange the natural things, places, and times where the gods will act and sometimes show themselves.[46]

By manipulating natural objects, the magus discovers the divine but does not cause it, strictly speaking. Nonetheless, from a Christian point of view, any magic that claims to "bring divine powers into the region of mortals," in the looser language used by Proclus, will break the first commandment. Better than any of his readers who lacked access to the Neoplatonic philosophers, Ficino understood the problem: that "supercelestial things can be made to favor us or perhaps even enter us." The continuum of divinity rises from terrestrial through celestial to even higher entities that can be seen either abstractly, as Forms and Ideas, or concretely, as mythic personalities. But the genial Jupiter and the brutal Mars, gods of ancient Greece and Rome, had been demoted to demons by the new Christian religion. The holy images in their temples turned into idols. Gems bearing such images might also be idols, as Ficino feared.[47]

Ficino's predicament was that the same authorities who taught him physics, physiology, and clinical practice had approved astrological images. His response to this perplexity in *De vita 3* makes it a characteristically Renaissance text. Vexed by a Christian's dilemma, he turns for answers to an ancient Greek – to Plotinus – and then he interprets Plotinus as imitating another sage whom he thought to be much older, Hermes Trismegistus.[48]

Ficino is thinking of an analogy between statues in particular and material things in general that Plotinus used to explain how magic operates. Although the divine is everywhere, its presence will work best for

mortals who prepare appropriate receptacles (statues, for example), which are like mirrors reflecting divine images. Every physical thing, in fact, is an image in matter of a lower form which in turn mirrors a higher form, making all natural objects ingredients for the magician, who puts them together to receive divine gifts from above. Since the Latin *Asclepius*, a text ascribed to Hermes Trismegistus, had briefly described statue-making of this kind in ancient Egypt, Ficino concludes that Plotinus took his magic from the Egyptian Hermes.[49]

B. Natural and Demonic Magic

Even before *De vita 3* appeared in print, Ficino had to defend his magic, using the old distinction between the natural and the demonic. "Wicked magic is based on worshipping demons," he maintains, while "natural magic gets help from the heavens for the body's good health." He categorically rejects demonic magic and attributes it to Satan. But there is also a non-demonic magic that only "brings natural materials under natural causes at the right moment to form them in a wondrous way." Another distinction between kinds of non-demonic magic then follows. "There are two types of this art," says Ficino, "one goes to extremes, but the other is of great importance. The former, to be sure, concocts useless marvels for show … and we must flee far from it since it is worthless and harmful to health. But we must hold on to the important type that links medicine with astrology."[50]

Ficino's magic can go right or wrong along at least two axes: one between *good* and *evil*, the other between *effective* and *ineffective*; moral philosophy explains the first, natural philosophy the second. Magic will be both effective and good (I), for example, if it uses an earthly object (myrobalans) to get power from the right heavenly object (Jupiter, the planet) in order to invigorate the elderly. Using the same earthly object for the same purpose to get power from the wrong heavenly object (Venus) will still be good, but not effective (II). Suppose we use a different object (a talisman) not to tap a planet's power spontaneously but to communicate with a person (Jupiter, the planetary demon), and suppose the person ignores us? Our magic will be ineffective but still evil (III): just trying to deal with demons is sinful. Worst of all is evil magic that works (IV): using something heavenly (Jupiter again) to make prayer more powerful with the unintended result of inciting a demon to attack. This simplified system of two axes omits other oppositions (natural/artificial, transitive/intransitive, genuine/false, licit/illicit, and so on) that would extend the graph into many other dimensions.[51]

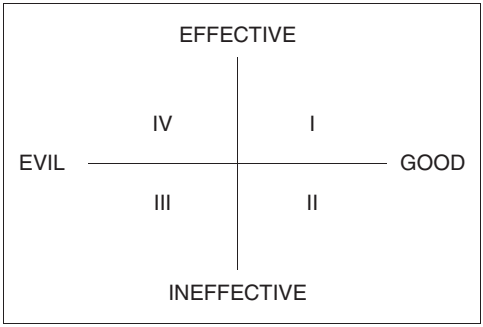


Figure 58. Evaluating Magic.

In this simpler scheme, natural magic can be good (e.g., for healing) or evil (e.g., for harming), as well as effective or ineffective, depending on intentions and results. All demonic magic is evil, however, whatever its effect or intent. But both natural and demonic magic can be fraudulent; either can be "spells and medicines bought of mountebanks," falsely claiming to produce true wonders. Finally, both natural and demonic magic can use artifice: setting a gem in gold, for example, or carving words on the gem. Ficino's reasons for thinking that some natural magic is good, authentic, and effective are of three kinds: *genealogical, empirical*, and *theoretical*.[52]

C. Authority and Evidence

Mythical, doxographic, and *historical* are other labels for reasons of the first type, which appeal not only to real persons like Plotinus but also to mythic figures like Hermes Trismegistus. As an architect of a culture that revered the past, Ficino naturally honors the authority of venerable sages like Aristotle, Albumasar, and Aquinas. But he also amplifies the voice of history with a special historiography – the ancient theology – that he recovered from the Church Fathers and revived for early modern Europe. In that framework, Ficino sees his Platonic Christianity as the convergence of two original revelations: Moses first received the sacred wisdom revealed to the biblical prophets, apostles, and evangelists, while Zoroaster and Hermes inaugurated a tradition of pagan wisdom that culminated in Plato and continued with Plotinus, Proclus, and the other Neoplatonists.[53]

Who better than Ficino could appreciate the place of Hermes in this lineage, especially on the topic of magic? One of his earliest works was

the *Pimander*, the first Latin version of fourteen treatises of the Corpus Hermeticum – Greek texts unknown to the medieval West. Ficino cites this material nowhere in the *Three Books on Life*, which is not surprising since its topics are theology and spirituality, not magic. In fact, *De vita* gives serious, though momentary, attention only to one part of the Hermetic Corpus – the *Asclepius*, a Latin discourse that Ficino did not need to translate. Outside the single chapter that condemns the *Asclepius* for demonolatry, he mentions Hermes as an author of different Hermetic writings only four times in passing.[54]

Ficino's short remarks comparing Egypt's cult-statues with the magical images of Plotinus are not kind to Hermes and the Egyptians. If the famous statues actually moved and spoke, it was not astral power but demonic deceit that animated them. When Egyptian priests lured demons into statues, their motive was to trick people into honoring false gods. Oracles delivered through the statues were also fraudulent. The verdict of Iamblichus was to "condemn the Egyptians because they not only accepted demons as steps to be followed toward the gods above but also very often adored them."[55]

Introducing the book that closes with this indecisive chapter on Plotinus and Hermes, Ficino announces that "the ancient philosophers, having examined the powers of things celestial and those below with the utmost care, … rightly seem to have turned their whole inquiry toward getting life for themselves from the heavens." He then lists Pythagoras, Democritus, and Apollonius of Tyana, but not Hermes, among "those who were the most devoted students of this topic," and the omission is unsurprising. Ficino's magical philosophizing might be called many things – natural, empirical, spiritual, medical, musical, mythical, astrological, philosophical, Neoplatonic, even scholastic – but surely not Hermetic. Hermes helped him find a pedigree for magic as Plotinus described it, but the Hermetic scriptures themselves – unlike Plotinus – give no philosophical account of magic.[56]

Empirical evidence for thinking magic good and effective might seem scarcer than historical authority, but it is plentiful in the *Three Books on Life*. Magic can be good when it is useful, and evidence of that utility is abundant in Ficino's medical lore. His antecedent moral argument is that a decision *not* to abandon the body for the care of the soul alone – a real option for Christians of his day – entails caring for the body's health, which is the task of medicine and medical magic. To learn these arts, to compile the hundreds of recipes in his book, Ficino consulted ancient and medieval authorities, but he also learned personally from

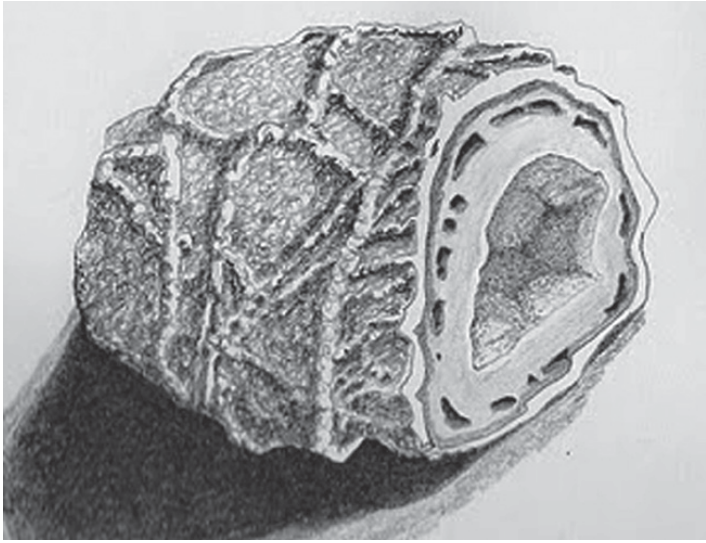


Figure 59. Geode.
(Emily Hawes, http://eehsketchaday2011.blogspot.com)

contemporaries and from his own experience. In fact, personal effort and experience (*experientia diligentiaque*) is a conspicuous theme of *De vita 3*, where it underwrites the problematic use of images.[57]

Everyone knows that hellebore is a purge, says Ficino. The plant's manifest power along with its occult property enable it to rejuvenate the spirit, body, and mind. Myrobalans also preserve youth in this way. And astrologers think that images on stones do the same. Are they right? Rhazes says that the egg-like eagle-stone amulet – perhaps a small geode, undecorated – speeds childbirth. By claiming personal experience of the stone's effect, Rhazes encourages his readers to consult their own clinical experience. Having read authorities who themselves relied on personal experience and effort, Ficino will then collect his own clinical data. "*My* experience," he writes, "is that medicine hardly acts at all when the Moon is in conjunction with Venus," and "*we* have found that night air is unfriendly to spirit."[58]

Taking up the harder topic of images, Ficino remembers that he had a plan to test them. He wanted to carve the constellation Ursa into a piece of magnetite and hang it around his neck with iron thread when the Moon's position was favorable. He found that the Bear was governed by Mars and Saturn, however, and read in the Platonists that evil demons

Figure 60. Lion-Headed Solar Demon.
(Vermaseren [1963], Figure 49, p. 119)

inhabit its northern skies, so he seems not to have actually tried this test. But he did witness a trial of a different image. The Indian dragon-stone that he describes, "marked with many little starlike dots in a row," was probably a calcified marine fossil – a crinoid stem. Soaked with strong vinegar, the apparently lifeless stone bubbled and moved about, giving a striking demonstration of magical power. In the stone's markings and motions, Ficino sees the tracks of Draco, a celestial source for the object's vitality.

The dragon-stone fascinates him because the image on it is natural and thus perhaps exempt from worries about talismans. But he also describes another, more threatening image of a lion "in gold, using his feet to roll a stone in the shape of the sun." This image vaguely resembles the talismans of the *Picatrix*, a Latinized manual of Arab astrology so notorious that Ficino uses it without naming it. This solar and leonine image, made when Leo is ascendant, is Ficino's cure for kidney disease, "approved by Pietro d'Abano and confirmed by experience." The experience claimed here is Pietro's and long past. But Ficino has also heard

about the lion talisman from Mengo Bianchelli da Faenza, a physician of his own circle who used it to cure Giovanni Marliani, a more famous colleague. Ficino has plenty of empirical evidence – data and testimony, personal and vicarious, past and present, physical and textual – for the usefulness of astrological images.[59]

D. Cosmology and Metaphysics

The most original arguments of *De vita 3* for talismans and other magical cures are *theoretical*, however, rather than empirical or historical. The theories in play overlap the medical content of *De vita* 1 and 2, but the distinctive theory in *De vita 3* is cosmological, physical, metaphysical, linguistic, and moral, and what motivates much of it is Ficino's wish to exclude action at a distance. His universe is Aristotelian and Ptolemaic, the familiar geocentric cosmos of concentric spheres. All physical action in this universe requires sustained contact, turning common cases, like the flight of a projectile, into puzzles and making less common phenomena like magnetism still more enigmatic. Since stars and planets are a long way off, how can they act on earthly objects like amulets and talismans?

"I don't quite see," says Ficino, "that images have *any* effect on a distant object, though I suspect they have some effect on those who wear them." But things were not so simple. First, every physician knew that lepers and plague victims infect others not just by physical contact but also by proximity: carriers of these diseases spread them just by looking at healthy people. Moreover, the great Plotinus, as Ficino knew, had been threatened by a more remote transmission of magical force – star-casting (*astrobolêsis, sideratio*). When a jealous competitor tried to aim a star at Plotinus, focusing its rays like light from a concave mirror, the philosopher bounced the astral power back at his attacker, causing convulsions and wasting. The harm seemed real enough, like the toxic effects of the basilisk or the evil eye, which act at a distance.[60]

One option would be to label such effects *magical* without trying to explain their causes, treating the phenomena as outside nature, uncovered by the prohibition of action at a distance and other physical laws. But to make his magic non-demonic, Ficino wants to keep it within natural limits. So he turns to the microcosm/macrocosm analogy, maintaining that the whole world has a Soul just as every animal has a soul. Natural objects in the world – rocks, plants, beasts, people, and stars – are distant *from one another*, but the World Soul is not distant *from them*. It animates them all and unites them, supplying channels for magical action.[61]

Ficino's cosmos has a Mind and a Body and a Soul to connect them. In cosmological terms, the Soul is the Primum Mobile, the animate sphere that surrounds and moves the sphere of the fixed stars and the seven lower planetary spheres. Corresponding to each *Idea* in the world's Mind is a *form* in its Soul. These forms are called *seminal reasons* because they are metaphysical seeds from which *species* grow, so that each species in the material world, which is the Body of the cosmos, corresponds to a seminal reason in its Soul. Every *individual* natural object is a member of a species. Take an object of one species and connect it with other individuals of different species: if all the species involved are related to the same Idea, this is a metaphysical recipe for magic, for drawing power down from that supercelestial Idea.[62]

The World Soul makes the *figures* that we see in the heavens; figures are patterns of stars and planets – constellations, for example – joined by rays of light and force emitted by heavenly bodies. Stored on high in these celestial structures are all the species of things below. The metaphysics of Ideas and forms, made visible in these configurations, shows how the Soul uses seminal reasons to make the *specific forms* embodied in physical objects. Talismans and magic statues, just because they are objects in a cosmos of such objects, connect with these circuits of power.[63]

But Christians must avoid statue magic because statues that move and speak are idols and receptacles for demons. Ficino counters with the assurance of Plotinus

> that everything can be done with the help of the World Soul in that it produces and activates forms of natural objects through certain seminal reasons divinely implanted in it. In fact, he even calls these reasons 'gods' because they are never abandoned by the Ideas of the supreme Mind.... Through these reasons Soul can easily affect the material objects to which it gave form in the beginning through those same reasons if, at the right moment, a magician or priest applies forms of things, having correctly assembled them – forms that are each related to one reason or another.

As a physician, Ficino knows that drugs acquire new forms when heated by the heavens through rays from stars and planets. As a philosopher, he understands the Neoplatonic metaphysics that gives new depth to this traditional medicine and may also exculpate his magic.[64]

Accordingly, Ficino urges his fellow physicians to "do careful research on which of the metals fits best in an order of some star and which stone is highest in this order ... so that you can borrow the heavenly things

that are in sympathy with such a receptacle." Without much explanation, he is talking about a *taxis* or *series*, another Neoplatonic construct. To close the gap between the bodiless One and the embodied many, the later Neoplatonists filled it with intermediates in graded chains that rise from matter to the immaterial and transmit power from above to below. Ficino describes the bottom end of one such series, a solar *taxis*, where "the cock or hawk has the highest place among animals, balsam or laurel among plants, gold among metals, and carbuncle or pantaurus among stones." Because this series is solar, power flows to the lowest objects in it from solar Ideas on high, down through solar forms, seminal reasons, and the Sun to earthly forms or species embodied as physical things.[65]

E. Spirit, Rays, and Figures

At its upper end, a series or *taxis* is disembodied, headed by immaterial forms that Proclus calls monads and henads. These metaphysical chains bind the cosmos together, and spirit does the same, reinforced by celestial *rays* and *figures*. Spirit, rays, and figures all provide physical and cosmological solutions to the problem of action at a distance.

Since the World's Body lives, moves, and generates other bodies, it obviously has a Soul and also spirit to connect that Soul with Body. This cosmic spirit is "a better body, a non-body, as it were," through which the World Soul makes all natural things live and breed. But gems and metals fail to generate other gems and metals: their hard, dense matter occludes the productive spirit in them. Yet when alchemists liberate that spirit by sublimation, art causes base metals to produce gold, releasing the latent power of the earthly spirit that differs from the cosmic kind – the quintessence – only in deriving from the four elements. Still, little of the spirit in earthbound humans is earth; more is water, much is air, and most is fire, making human spirit like the celestial fifth element. Like the cosmic spirit, ours is "a very thin body, as if somehow not body when it is soul, and likewise somehow not soul when it is body." This peculiar substance pervades the universe, making it coherent by connecting the separate objects in it. We can use it "to acquire the occult forces of the stars."[66]

Bound together physically and metaphysically, the parts of the world constitute "a living thing more unified than any other" – a cosmic organism. The limbs and organs of any animal affect one another, but the influence of every part of this perfect organism on all other parts will be even stronger, helping the world's Body to move, live, and breathe. Its breath is the cosmic spirit which, when applied to our spirit, connects us with the

animate heavens. By opening these magical channels and acting as part of the universal organism, humans can get life and power from above.[67]

Heaven is far away, however, and "does not touch earth, … [except] by the rays of the stars, which are like its eyes." Just as earthly fire warms, penetrates, and changes other natural things, these much stronger rays penetrate the whole mass of the earth to form gems and metals deep inside it. Since talismans are made of the same gems and metals, the rays that first formed these minerals will penetrate talismans instantly. Their hardness is no obstacle, much less the softer material of the human body and spirit. In fact, stones and metals are excellent receptacles (like magical capacitors) for rays because their hard matter insulates and stores the occult powers that rays transmit.[68]

Rays are organic and alive. When Ficino says that they come from the eyes of the world's Body, he is thinking not only of animal and human figures in the zodiac but also, by analogy, of earthly creatures like the basilisk as well as people who project harm from their evil eyes. Alkindi, whom Ficino cites, had taught that rays run in both directions between any two (or more) objects – between the basilisk and its victim, reciprocally, but also among a planet, the stars in a constellation and an astrologer gazing at the heavens. Planets are said to be in various *aspects* (trine, quartile, sextile), meaning degrees of angular distance from one another, but an *aspectus* is also a 'looking at.' As we look at the planets and stars, those mighty living beings look at each other and at us: "with the rays of their eyes, the heavenly bodies work wonders on our bodies by gazing at them and making contact."[69]

Rays streaming from stars and planets make up figures. Some figures, like the zodiacal constellations, are visible to anyone who sees the night sky, but others are the arcana of astrology and less apparent. To the untutored eye it will not be obvious, for example, "when the Moon is located under the watery signs, Cancer, Pisces and Scorpio, with the rays of Jupiter shining upon it," a collocation that Ficino describes as good for a patient who needs purging.[70]

This luminary, those three constellations, and that planet make a celestial figure, whose analog can be made on earth by carving a stone with images of Jupiter and the Moon, a crab, two fish, and a scorpion, producing a watery talisman. If the stone is a watery mineral (aquamarine, perhaps) set in gold (a jovial metal), the talisman will be stronger because "the elemental power in its matter matches the specific power naturally innate in it, and then this matches the other specific power received from the heavens through a figure." Assuming that the matter of the talisman

conforms to the watery figure in the heavens, this natural celestial figure will augment the power of the artificial figure carved in the stone, which should be done when the heavenly figure rules the sky. The effect will be like music produced by a lyre that resonates with another lyre but does not touch it.[71]

F. Nature and Art

The ancient musical analogy, which Ficino knew from Plato and Plotinus, is crucial to his defense of natural magic. Humans make artificial things, like lyres and talismans, but only God made natural objects, like stones, which therefore share in the divine goodness. Moreover, a human artificer can be held responsible for human artifice, but not for God's creation. Hence, to the extent that magic is meant to do good and is done with the natural objects that are God's creatures, the magician will be blameless. To pile up evidence for this argument, Ficino extends his theorizing about spirit, rays, and figures with models and mechanisms for magic that exploit the powers of *natural* objects. Besides the resonance of lyres in attunement, Ficino also discusses seeds, grafts, baits, kindling, reflection, attraction, impregnation, and fetal development as physical models of magical action.[72]

The resounding lyre is a critical case because lyres, like talismans, are *artificial* things whose natural components (wood, catgut, metal, stone) are physically effective and, at worst, morally neutral. Thomas Aquinas, to whom Ficino defers in sensitive passages of *De vita 3*, confirms "those effects that the heavens ordinarily cause through … natural objects." A talisman, however, is more than the sum of its natural parts. It works only as "a composite already located in some particular species of the artificial," given that "constellations provide the order of being and persisting not only for natural things but also for the artificial." By *composite* Thomas means a natural object, the substantial union of matter and form that is a physical particular – this emerald as distinct from that one. But Thomas also says that the image on a gem works "not so much because some figure is in the matter" as because the figured composite has been put – by its figure – in a species of artificial things. This is Ficino's account of Thomas's position, which in the *Summa theologiae* is actually less generous: no celestial power flows to talismans "insofar as they are artificial, but only because of their natural matter."[73]

For Ficino and Thomas both, carving a scorpion on a gem will make the carved stone an individual member of the genus of all scorpions, both natural and artificial, and of the subsidiary genus of artificial

scorpions – which includes drawings, paintings, statues, jewels, toys, and so on. But a scorpion-gem will also belong to the *taxis* that includes the arachnid on earth, Scorpio in the sky, and a supercelestial Scorpion among the henads. Power flows to the gem because a figure plugs it into a metaphysical circuit – a stronger version of what, according to Ficino, Thomas had permitted stars to do for artificial things. But in words that Ficino does not explain – from the *Summa contra gentiles* – Thomas had also said that "images in artificial objects are like substantial forms," namely, the forms that make natural composites what they are, members of a *natural* species. "Nothing precludes … heavenly influence coming … from the arrangement of the figure that gives the image its species," Thomas concluded, "not insofar as [the figure] is a figure, but insofar as it causes the species of what is artificially made and gets power from the stars."[74]

Since Ficino cites several texts by Thomas about magic and images, including the one that describes images as quasi-substantial forms, his failure to make more of this attractive argument is puzzling. Thinking it "obvious that even lifeless bodies acquire certain powers and abilities from the heavenly bodies …beyond those of the … qualities of the elements," Thomas reasoned that if "various stones and plants acquire other occult powers … , nothing prevents a human from getting an ability from the influence of a heavenly body to do certain physical things – for a physician to heal, for example." Despite the openings given him, perhaps Ficino thought it provocative to enlist the saint so persuasively in so dubious a cause. His own reasoning about images as figures, at any rate, is careful and convoluted, leading to the conclusion that

> figures … have a property that is peculiar and inseparable from species inasmuch as figures have been fixed by the heavens together with species. In fact, they also have a very strong linkage with Ideas in the … Mind of the World. And since these same figures are a type of … species, … they get their own powers there.

The forms, figures, and species of natural objects connect them and their users not only with heavenly bodies but also with divine and supercelestial Ideas – an alluring but dangerous prospect. By using physical models to explain the same connections, Ficino brings his metaphysical magic down to earth and makes it less threatening.[75]

G. Models for Magic

Comparing astrology with farming, for example, makes stargazing seem practical and credible. Just as the farmer sows seed in a field to make it

Figure 61. The Power of Pisces.
(Reynmann [1523], title-page)

fertile or puts a graft into a plant to improve its species, so the magus will collect influences from above to insert them into natural objects and empower them. Females of all kinds, says Ficino – animal, vegetable, and mineral – are subjected to the corresponding males for impregnation: when "the magus subjects terrestrial things to celestials" to make them magical, the process is just like the male magnet causing the female iron to be attracted. Since everything is alive in a world that "wants its parts to be married together," natural attractions are sexual – pulling heavy things to the earth's center, light things up to the Moon, moist things down to the roots of plants – as magic emulates the loving Nature which is "everywhere the sorceress." Nature supplies all the materials for magical action, which becomes artificial only when humans intervene to rearrange the natural objects that suffice for doing magic.[76]

Spirit "is a kind of bait or kindling for linking Soul to Body in the cosmos," writes Ficino, "and Soul is also a kind of kindling in the spirit and Body of the world." Spirit is bait for higher powers when nature uses a fetus to draw down the spirit that will then attract a soul. Taken from Proclus, the kindling analogy for Soul's activity is more complex. For Body and spirit both, Soul is the force that draws them up to Mind. In detail, the model is dry wood (Body) penetrated by oil (spirit) to sustain the heat and fire (Soul) which is the vehicle of light (Mind): 'kindling' is Ficino's term for this whole apparatus of flaming, oil-soaked wood, lit from above without contact. A related analogy substitutes sulfur under a flame for the ignited oily wood. Vapors from the sulfur rise, as the spirit ascends, before they burst into flame from an incendiary cause that works on them from above to below and at a distance.[77]

In simpler terms, "wherever some type of matter is exposed to the celestials as a glass mirror is to your face or the wall opposite you to your voice, the matter is immediately affected from on high by a very powerful agent." The reflection of an image in a mirror is an intuitive model of an instantaneous effect happening at a distance from its cause, like the astral Leo's immediate influence on a leonine drug. But sound reflected from a wall recalls a worry already created by the model of the resonating lyre. Sounds make music, music can be sung with meaningful words, and meanings can be addressed only to minds, one's own or another's. In the latter case, whose mind is it? Angel or demon?[78]

H. Music, Gods, and Demons

Discussing "the power of words and song to get help from the heavens," Ficino recommends learning the virtues of heavenly bodies and then "inserting them into the meanings of our words." Clearly, part of his medical magic is astral song containing meaningful speech. To evaluate this music and other magical therapies, he provides a ranking of various means of healing – material and mental – and the planets associated with them, calling his schema "seven levels where attraction proceeds from higher entities to those below" and putting music in the middle with the Sun.[79]

Stones and metals fall to the bottom of the list with the Moon. Their hardness makes it difficult to get at the power stored inside them, and moral problems arise if they carry images. Plants, animals, powders, vapors and odors at levels 2 and 3 are all within the range of conventional medicine and not as impressive as Ficino's magical remedies. His major innovation comes at level 4 with sound, music, and song. Above

Levels	*Means of Healing*	*Planets*
7	Intelligence	Saturn
6	Reason	Jupiter
5	Imagination	Mars
4	Sound, Music, Song	Sun
3	Powders, Vapors, Odors	Venus
2	Plants, Animals	Mercury
1	Stones, Metals	Moon

Figure 62. Planetary Levels of Healing.

this level, the higher remedies escape the constraints of matter and rise beyond the scope of *De vita 3*. Like the lower therapies, the solar cures at level 4 are still material because air, the medium that transmits them, is a kind of matter.[80]

"The very matter of song is much purer and more like the heavens than the matter of medicines," Ficino explains, "for it is hot or warm air, still breathing, in fact." This living matter "even carries meaning like a mind." Moreover, if song is "filled with spirit and meaning … and corresponds to one or another of the heavenly bodies, it has no less power than any other composite medicine, projecting power into the singer and then from this person into the listener nearby." In fact, song is just "another spirit": like the evil eye that emits vapors to harm a victim, singing is therefore infectious in the medical sense. Such dangers multiply with every line of Ficino's chapter on astral song, which runs the risk not only of demonolatry but also of magical assault on innocent bystanders.[81]

Hence, although Ficino spends most of his worry in *De vita 3* on talismans, the magical singing that bothers him less is actually the greater threat. Words in songs, like those on talismans, are a moral trap because they speak to uninvited and malignant minds. Unlike songs, however, talismans are unlikely transmitters of injury to others. Whatever they receive from above will be insulated by their dense, heavy matter, so different from the light and airy stuff of song, through which harmful forces can easily spread from the singer's spirit to the listener's. "The amazing power in spirit that sings excitedly" will be the more dangerous magic, physically for those who hear the song and morally for the singer, especially if the singing harmonizes with the music of the spheres.[82]

Although all seven planets have voices, only the Sun, Mercury, Venus, and Jupiter can sing. "When your playing and singing reverberates as theirs does, they are seen to reply right away," according to Ficino, "as

naturally as a vibration resounding from a lute or an echo from a wall." But if the singers in the celestial quartet are planetary gods, exchanging musical messages with them will be sinful, especially since Ficino specifies that magical communication runs between souls as well as bodies. To make matters worse, while harmonic forces sent down by heavenly souls sometimes descend indirectly, carried by rays, they also sometimes arrive straight from the celestials "by a choice of free will." If magic needs a numinous act of will from on high, human will may also be complicit, and magic loses the camouflage of unwilled natural action.[83]

"I can call spirits from the vasty deep," the wizard brags, and then the cynic asks, "but will they come?" Whether spiritual persons actually arrive or not, the magus who summons them, intentionally or unintentionally, is in moral trouble unless the Church has blessed the message – when godparents renounce Satan at baptism, for example, or when a priest exorcizes a demon. But Ficino thinks he can avoid the danger of astral singing, or perhaps diminish it, by downgrading planetary gods to demons. The demons who might hear Ficino's songs, however, are not the ordinary unclean spirits or fallen angels of Christian demonology, who – although they are not evil by nature – always do evil. In Greek religion generally, and also for the Neoplatonists, a demon is a mighty being, lower than the gods but still higher than humans. In the hierarchies of Neoplatonic theology, deities and demons come in many grades, and Ficino fixes on those that are low enough not to be "completely separate from matter" while still sharing the vitality of the World Soul. These *cosmic* demons are embodied, unlike the bodiless *hypercosmic* gods, and their bodies are stars and planets.[84]

Ficino's cosmic demons have three key properties: they are not high gods; they are not evil; and their bodies are the heavenly bodies of astrology. Since the Neoplatonists placed many Jupiters, Mercuries, and other Olympians at all levels of their elaborate theology, it was easy for Ficino to take the cue and turn the planetary gods into lesser demons. Having demoted the sky gods, he also sanitized them by exploiting the kinship between the tutelary or personal demon of the Neoplatonists, with all its astrological associations, and the Christian guardian angel. The Lord of Geniture in every person's horoscope is a planetary avatar of this protective demon. The natural talent (*ingenium*) that the horoscope reveals reflects a divinity (*genius*) within. "To every person born," says Ficino, "a particular demon and guardian of life has been allotted by his very own star."[85]

He also mentions that an inferior *aerial* demon of the cosmic type may be present beforehand in the matter of natural objects that the magician

uses. If an aerial demon were just an unthinking impersonal force, like a magical ray, or just a type of mindless matter, like spirit, Ficino might be off the hook, morally and theologically. But the "airy spirit" of *The Tempest*, for example, is no such thing. "Come with a thought, I thank thee, Ariel, come," says Prospero, and Ariel enters: "Thy thoughts I cleave to. What's thy pleasure?"[86]

A demonic mind cleaving to human thoughts and fulfilling human whims is just what Ficino needs to avoid, which is why he wants "a *natural* force of divinity" built into magical objects. He attributes the notion to Hermes, but this allusion to the Hermetic *Asclepius* occurs in the same passage where "Iamblichus condemns the Egyptians" for demonolatry – the Iamblichus who is Ficino's main source for the doctrine of cosmic and hypercosmic demons. From Iamblichus two things will have been clear to him: that lower demons and high gods alike are persons with souls and minds, not just inert forces or peculiar kinds of matter; and that the magic of natural objects is always in the service of divine persons. In the end, the labyrinth of Platonic theology gave Ficino no place to hide.[87]

Accordingly, his philosophical theory of magic is a tour de force of caution and evasion. Although *De vita 3* risks a few confident claims, hedges and hesitations are everywhere. Ficino warns that some topics, like incantation, are best omitted and that some points of theory and practice are safer than others. Making a drug under celestial influence, for example, is better than putting the same power in a talismanic ring. If the ring works, the best explanation will be physical: the body's heat somehow energizes the matter of the ring, which acts on spirit but not the soul. Sometimes Ficino shields himself from association with suspect teachings just by denying them: astrologers are simply wrong to say that conjuring demons works best under the Pleiades. Sometimes he distances himself by attributing problematic positions to anonymous authorities, punctuating his careful expositions with phrases like "so they claim" and "so they think."[88]

Although Ficino seldom tells us what *he thinks* about magic in a clear, straightforward way, the following statement on the crucial case of talismans has the ring of an official, public position:

> I believe it would be safer to trust oneself to medicines than to images, and that the arguments about heavenly power that I gave in favor of images can have force in the case of medicines rather than figures. For if images have power, the likelihood is not so much that they have acquired it recently through a figure as that they possess it

> naturally through matter treated in this way, … not so much by coming to have a figure as by the heating that comes from hammering. If the hammering and heating happen harmonically, in consonance with the celestial harmony that once infused power into the matter, it excites that same power and makes it strong.… So maybe it is just some kind of hammering and heating that draws out power latent in the matter – when the time is right, obviously. Taking advantage of the celestial moment certainly helps in compounding medicines. But if anyone should want to use metals and stones, it is best just to hammer and heat them without making any figure. For apart from my suspicion that figures are worthless, we should not rashly permit even the shadow of idolatry.

Ficino's bottom line is prudential and conventional: "never try anything at all that religion forbids."[89]

Long before he wrote *De vita 3*, he knew the risks that such a project would bring. In 1477 he had drafted a tract against predictive astrology – but favoring medical applications – before writing his plague book and *De vita 1*. As *De vita 3* circulated in Florence, he pricked up his ears for the predictable complaints. Are medicine and astrology fit callings for a priest? Is astrology not a threat to free will? How can the heavens be alive if pantheism is heresy? Surely the demonolatry implied by magical images of pagan gods is a sin against religion. Answering his inquisitors playfully and sarcastically was one way to elude their questions. When the attacks grew more pointed, he suggested a simpler excuse, a scholar's rhetorical dodge, to his protectors: "tell them that magic or images are not really approved by Marsilio but described as he interprets Plotinus."[90]

His evasions notwithstanding, Ficino knew full well that *De vita*, with all its learned philosophizing, was also a compilation of recipes, a medical advice book. If doctors and patients took his counsel, he was responsible for the physical or moral harm done to them. This is why, when speaking of a love talisman that resembles an image from the disreputable *Picatrix*, he mentions "many minute observations about stars and words which I do not propose to repeat since my topic is medicine, not spells." These words draw an unusually sharp line between medicine and magic, evidence that their author understands the ethical burden of his detailed prescriptions.[91]

Yet Ficino's moral response to the problem of magic is not as convincing as his natural philosophy and metaphysics. In its framework of Neoplatonized Aristotelianism, *De vita* succeeds as a philosophical account of magic's *effectiveness*, which may explain why the book stayed

in print for more than 150 years. Ficino's many readers ought not to have been persuaded, however, that his magic would also be *good* for pious Christians. In fact, it was too effective to be entirely good – always overreaching or threatening to overreach, from the domain of natural objects into the realm of personal spirits:

> Upon the corner of the moon
> There hangs a vap'rous drop profound,
> I'll catch it ere it come to ground;
> And that, distill'd by magic sleights,
> Shall raise such artificial sprites
> As by the strength of their illusion
> Shall draw him on to his confusion.[92]

5 BEFORE AND AFTER DE VITA

> 'Tis true; there's magic in the web of it.[93]

Marlowe's Faustus is another overreacher and a bolder one: he takes huge risks for petty reasons, and his rewards are transient, even illusory. Asking Mephistopheles for "a book wherein I might behold all spells and incantations," Faustus already has instructions for making a "circle on the ground." If the correct spell activates the circle, "men in armour shall appear to thee, ready to execute what thou desir'st." A circle designed to do just that is part of a text compiled not long before Ficino was born. The book is a grimoire or magic manual: its recipes for summoning demons show what Ficino was so anxious to avoid when he gave his own directions for natural magic.[94]

Most of this earlier text, which is anonymous and has no title, is a miscellany in crude Latin of procedures (*experimenta*) for divining, creating illusions, and changing the thoughts or feelings of other persons – in most cases by calling on spirits or demons. Although the effects sought – no healing, harming, or killing – are fewer than in the *Greek Magical Papyri*, these 'experiments' belong to the same genre: they are recorded in a handbook of magic. The Latin spells are thoroughly Christianized, however: only a Catholic cleric (probably a priest, like Ficino) can have thought them up.[95]

One procedure in this manual shows how to use a sword, a bird, and a drawing to produce an entertainment (*ludus*), a banquet served by spirits. Like the wagtail or wryneck prized by the *Chaldaean Oracles*, the required bird – a hoopoe (*Upupa epops*) – "has great power for necromantic rites and invoking demons." The magician must

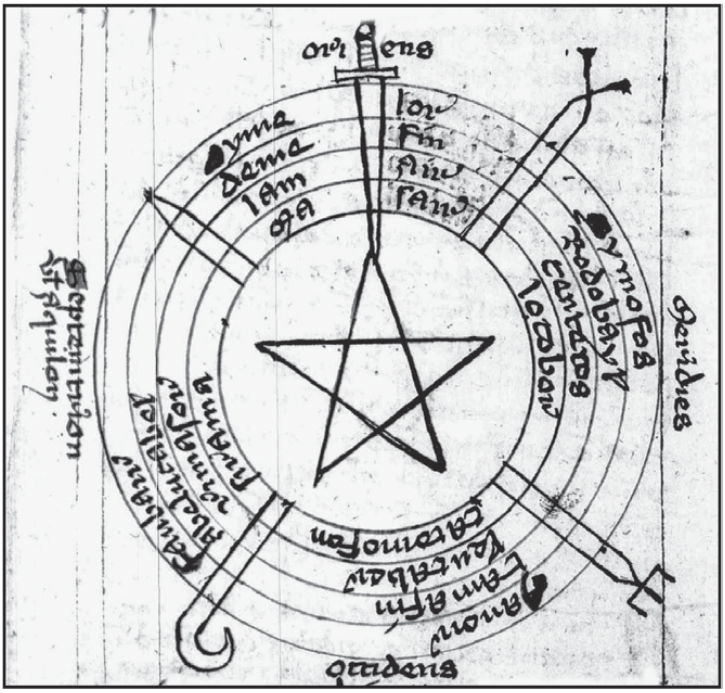


Figure 63. Magic Circles with a Sword and Pentangle. (Munich, Bayerische Staatsbibliothek, Clm 849, fol. 15ᵛ)

> go outside the village and bring with you a brightly shining sword and a hoopoe bird and use the sword to make circles in some remote place. After you have done that, with the point of the sword you must write the sixteen names as given below in the figure. When that is done, you must make a drawing of the sword inside the circle at the east, as shown in this design:

The sixteen names to be spoken are "Oymelor, Demefin, Lamair, Masair, Symofor, Rodobayl, Tentetos, Lotobor, Memoyr, Tamafin, Leutaber, Tatomofon, Faubair, Selutabel, Rimasor, Syrama." The magician summons these "spirits most festive" by invoking the Father, Son, and Holy Spirit; the Sun, Moon and Stars;"all those who can frighten and bind you, and … those who must come when I call them." Meanwhile, he has tied the hoopoe to him "so that it cannot get away from the inside circle, in which you must be standing."

When the sixteen spirits arrive, twelve will stand outside the nested circles "watching and talking to you." Then from the revelers "seated

near the circles, three kings will come and ask you to come out and dine with them." Although the spectacle should delight the magician, he may not leave the circles. Eventually, after he declines the invitation, all the festive spirits will vanish except the twelve, who will ask him for the hoopoe. Once he gives them the bird, he "can move out of the circles, erasing them so that nothing will be seen as you leave carrying your sword."[96]

Like the *Greek Magical Papyri*, most of this Latin collection is just a compilation, presented without context or explanation. But one section is a *Book of Consecrations* that aims to show "what its devices are for and what their effects are." In fact, the purpose of this section is to keep a magic manual effective. If the procedures in a grimoire lose their power – perhaps because words were mangled in copying them – the spells can be fixed by following the instructions in the *Book of Consecrations* about ritual purity, technique, and prayer. Some parts of the prescribed prayers are normal and orthodox, within the experience of the book's custodian – a cleric who for eleven days "must hear mass, bring this book with him and put it on the altar until the mass has ended, doing so with great reverence and with prayer and fasting."

The defective procedures will be repaired by God's mighty names, some of them familiar from scripture and some not:

> On, Jesus Christ, Alpha and O, Ely, Eloye, On, Otheon, Stimlamathon, Ezelphares, Tetragrammaton, Elyoraz, Eygiraem, Usirion, Oristion, Orona, Anellabiassim, Noyn, Messias, Cother, Emanuel, Sabaoth, Adonay and all the secret names contained in this book.

The magician asks for "power to subdue evil spirits, and make them always humbly obey the exorcist … and come right away, wherever they may be, to give true answers to the exorcist's orders." What orders? An exorcist's command to expel evil spirits, like some prayers in the *Book of Consecrations*, will be orthodox, but not if God's names – both secret and public – are invoked to mend procedures unauthorized by the Church. The magician wants "power to consecrate a bonded spirit, making him able to do all the invocations and conjurations for those spirits and all the other procedures."[97]

Such procedures go far in a spell (not part of the *Book of Consecrations*) that summons Satan under the name Mirage – the Wonder-Doer, perhaps, from *mirum* and *agere*. The spell invokes Jesus, Michael, Gabriel, Raphael, Abraham, Isaac, Jacob, and "all the saints and chosen of God." The magician asks their help "against that evil spirit, Mirage, wherever

he lurks, so that on hearing your name he will hurry away from his place and come to me." He also turns the Devil's many titles against him:

> Mirage most wicked, enemy of faith, inventor of death for humankind, voice of injustice, root of evils, incendiary of vice, seducer of humans, master of demons, you who stand and resist though you know that your powers are lost – fear him who was sacrificed in Isaac, sold in Joseph, slain in the lamb, crucified in man and then rose up triumphant as God. Hear then, Mirage, fear God's words, and be ready to serve me in all the dealings that must be tended to.

Exorcism is one threat against the Devil. Another is a spell that works "by the power of all spirits, by all the characters, by the Seal of Solomon, by Solomon's rings and by the seven golden lampstands shining before the Lord," compelling Satan himself to "make a spirit come to me and bring me gold and silver or hidden treasures." The magician demands

> a servant in all that I desire who will appear before me right way whenever I invoke him, kindly and submissive: … let it be, let it be, let it be done, amen! Send me a spirit … with power to make me invisible whenever I want, obedient to me and always under my control, and also grant him the power to consecrate books, procedures and everything else that I want.

Fantasies of unlimited information, unquestioned obedience, untold wealth, and superhuman powers have tempted the magician – like Faustus – to deal with the Devil: "all the dealings that must be tended to" are those delusions.[98]

Before and after he wrote *De vita 3*, Ficino approached magic in several different ways, treating it cautiously, on the whole, carefully avoiding the diabolical traps that would snare Faustus or call up Mirage. Translating the Orphic *Hymns* was an early project that brought magic to Ficino's attention, but he was reluctant to circulate his Latin versions of those songs. The Greek hymns that honor pagan gods also give liturgical instructions for the type of incense or smoke favored by each deity. Singing such lyrics – the 'Orphic singing' that Ficino may have tried – would be double jeopardy, not only worshipping false gods but also providing vaporous receptacles in which aerial demons might manifest themselves.[99]

Although ingenious efforts to avoid such dangers are everywhere in Ficino's discussions of magic, sometimes he handles the topic more aggressively than in *De vita*. During his career of nearly forty years, occasions of greater and lesser risk presented themselves as he interpreted Platonic philosophy and created his own poetic theology. His bolder

accounts of magic, hidden in dense thickets of astro-mythological metaphysics, were less influential than the more accessible and more politic *De vita*, but no less informative. Our main guide to Ficino's more recondite magic is the brilliant exegesis of Michael Allen, in the pieces cited here and in many others.

Reading the *Timaeus*, for example, Ficino sees magic in Plato's cosmology. The Demiurge – treated as the second of three supreme beings by the Neoplatonists and then multiplied into higher and lower demiurges – seems to be a pagan distortion of the trinitarian Christ. But in Plato's myth of genesis Ficino finds yet another way for magical power to be transmitted from above into the lower creation. In the world made by the Demiurge, incarnate humans are planar triangular souls in solid oblong bodies. Humans who understand this cosmic geometry can use mathematical optics to connect with the spheres of celestial light that demons inhabit. All embodied things – whether demonic, human, or merely physical – emit likenesses (*idola, simulacra*) of themselves. The magus can use spirit as a mirror to capture the likeness of any other thing, including the demons who are lords of light and shadow, masters of calculation and illusion.[100]

Man himself is a likeness of God, of course, but even that likeness can be trapped by the human imagination in the shadow-world of the senses unless reason strips everything sensual away and plunges us into divine light. That is the advice – therapy for the embodied soul – of the *Platonic Theology*. But likenesses and statues have more energy in the *Phaedrus* commentary: a lover, a beloved, and the God worshipped by both are conjoined in a statue that is the embodied lover's idea of the psychic trinity within. The statue-making is even more ambitious in the late commentary on pseudo-Dionysius, where Ficino speculates that the Creator has put a statue of himself into every human creature. But the divine statues are cloaked by human bodies – their passions, phantasms, discursive reason, manifold ideas, and the very distinction between soul and mind: beyond these encumbrances is Unity, unveiled only by removing all the garments of embodiment. If we uncover and recover God's likeness inside us, uncloaking the statue will be just the reverse of idolatry.[101]

Other statues are idols, however, and demons dwelling in light rule the images, reflections, and shaded absences of light. The magus attracts demons with optics and detects them with his own faculty of image-making – his imagination or phantasy – which works through the various veils and vehicles that surround the soul. Using lenses and mirrors of spirit, the magus reflects, refracts, and focuses images, which act

at a distance and affect other people, for good or for ill. Such a magus, on Ficino's reading of the *Sophist*, will be not quite real, a shape-shifting wizard, neither here nor there, moving up and down a scale of multiple sophistry, sometimes luring souls to sink down into nature, at other times purging them to rise higher. Even the philosopher is a kind of sophist and hence a magician too.[102]

Like everything else in the universe of Neoplatonism – sophists and philosophers, demons and demiurges – inspiration is hierarchical but fluid and never static. Although the highest divine afflatus comes from the One, Ficino finds four grades of frenzy in the *Phaedrus* for poets, lovers, priests, and prophets. At the lowest level of inspiration, poetry and music prepare the soul to be occupied by the Muses and, by implication, they also expose it to possession by demons. Alienation of the higher intellect in the human rational animal withdraws the mind from body and from reason, leaving it disembodied, irrational, and frenzied – a higher angelic state, if the magic works well. Since magic is cosmic love, since all the parts of the world are in organic, erotic communion, there is every chance that magic will be loving and beneficent.[103]

A malevolent soul will counter sympathy with antipathy, however, bringing hate into the world and destroying love. Commenting on Plato's *Laws* and composing his *Platonic Theology*, Ficino learned a type of magic from Avicenna that makes antipathy especially dangerous. Avicenna had taught that the alienated soul grows stronger as it gets farther from the body. Ultimately, it can act distantly on other objects. Powers of the soul's disembodiment therefore include telepathy, telekinesis, levitation, and other paranormal abilities. When the soul is optimally detached from the body, however, its reach extends not just to material objects but to other souls as well. In that case, should an injured person fear

> conjurers and sorcerers that …
> by magic verses have contriv'd his end?

That is what we all must fear, according to Ficino. Hatred projected by an evil soul can kill by breaking the bond of love that ties another person's soul to her body.[104]

Like love, on the other hand, dialectic is positive and demonic, as Ficino realized, treating Plato's dialectic as the perfection of the magical ancient theology recorded in the *Oracles* of Zoroaster and the *Hymns* of Orpheus. If a demon skilled in dialectic helps a human use that art with skill, the dialectician rises beyond ordinary thought to ecstasies that will liberate him from the body and from reason. Eventually, having philosophized for

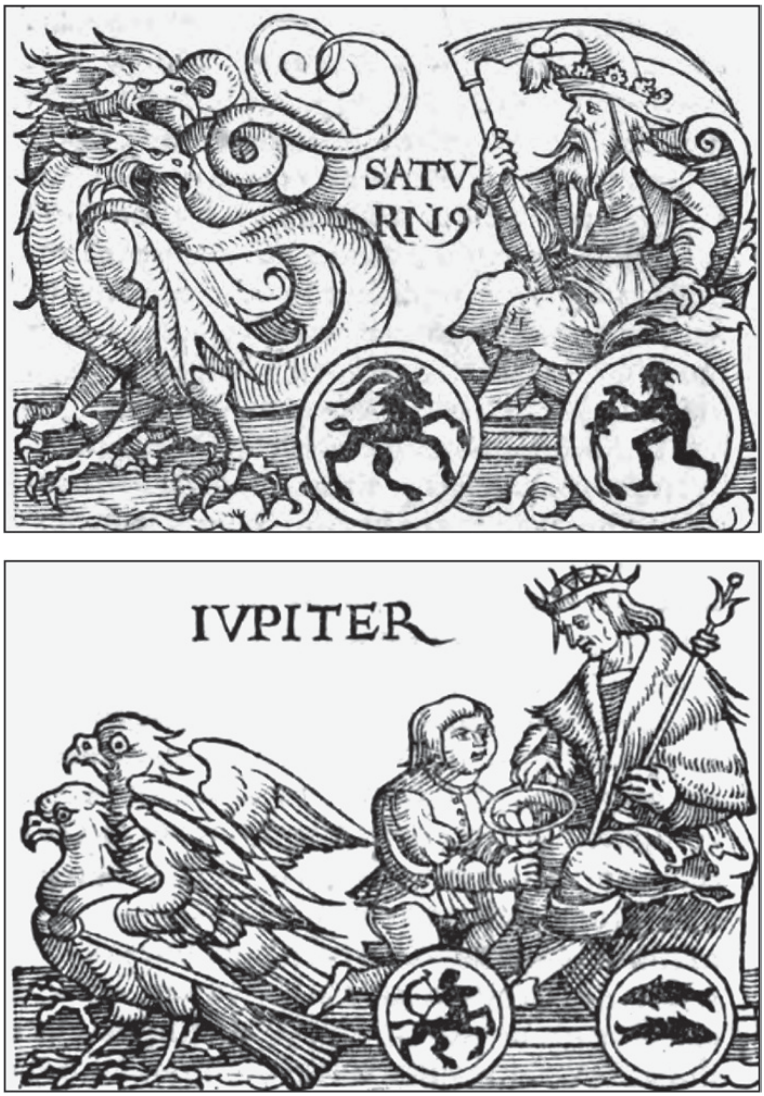


Figure 64. Saturn, Jupiter.
(Bonatti [1550], pp. 98, 101)

millennia, the philosopher actually becomes a higher demon. In another myth, told in the *Republic*, the soul purified by long cycles of rebirth seems to conquer time itself.[105]

In a gnomic verse from the *Oracles* – "you shall not leave matter's excrement at the edge" – Ficino saw even more saving grace, enough

power to levitate an ensouled, feculent body on earth or glorify a resurrected body in heaven, like the transfigured Christ or a monk floating in his cell or even a conjurer dazzling a crowd. Light, the magical medium in play, has two salient properties: brightness, understood both physically and spiritually; and lightness or levity, likewise understood. Properly lightened, the "soul, a fire shining by the Father's power, stays deathless," say the *Oracles*: the human creature ascends to the Creator by trading the body's gravity for levity, climbing the "golden cord" described by Homer through grades of illumination, from the visible, dispersed light here below up to God's absolutely unitary brilliance. Like Zoroaster, Elijah, Paul, and Jesus himself, we too can soar or drift away by following precepts of the Magi, especially their advice on tending the soul's vehicle or pneumatic covering.[106]

The Magi, having followed a star to Bethlehem, put astrology into Christ's sacred story. Reflecting on Plato's *Statesman* and Vergil's fourth *Eclogue*, Ficino certainly thinks that astrology is more than fortune telling, not just a crude trick to peek around the corner of time: his Platonic astrology is an elegant glass-bead game of abstract mathematics. Yet he had to contend with his own belief that the heavens are efficient causes of *physical* effects on earth, constantly changing the thousands of *natural* objects that every physician needs. Accordingly, since *matter* is a drag on the cosmic rounds of stars and planets, the cycles ruled by them – lives of individuals, histories of states, and epochs of the world – must inevitably be counted down by a fatal number computed by celestial mathematics.

This will be so unless, in astro-mythical terms, Jupiter lets Saturn be reborn for a new Age of Gold, or – in the language of Christian eschatology – until we shall have built a New Jerusalem. Even so, in the sacred history that leads through a glorious apocalypse toward the City of God, a pivotal chapter will have been the birth of Christ, whom magicians found on earth by tracking a star. Religion itself is a theorem of astrology, and Ficino's magical calculus – despite all his dodges and second thoughts – is daring indeed.[107]

CHAPTER TWELVE

NATURE, MAGIC, AND THE ART OF PICTURING

Look here, upon this picture,
and upon this.[1]

1 ARISTOTELIAN NATURALISM AND NATURAL MAGIC

'Renaissance' and 'Scientific Revolution' are names for periods of Western history, eras of deep and partly concurrent change from pre-modern to modern times. Yet one name is retrospective, the other prospective. To decide what was revolutionary in the Scientific Revolution, students of past science have sometimes read the pre-Newtonian evidence in a post-Newtonian light, counting early modern inquiry into nature as more or less important insofar as it resembles modern science. But students of that same post-medieval culture, in order to learn what was reborn after the Middle Ages, have often looked backward, admiring the Renaissance as much for mimetic as for creative achievements. When the topic is the study of nature during the Renaissance, however, periods and labels become problematic: experience shows that good science must be progressive.

The fog thins if we substitute 'natural philosophy' for 'science.' After all, Newton's title for his masterpiece was not the *Mathematical Principles of Science*. In 1687 the category 'natural philosophy' had not yet given way to 'science,' even though mimesis and erudition no longer inspired much inquiry into nature. After Descartes, those motives waned, especially for the thinkers who came to be canonical. The learned Leibniz, a librarian and the son of a university professor, is the conspicuous anomaly – more than Pierre Gassendi, whose books quickly became unreadable just because of his erudition. Gassendi, a victim and beneficiary of the

new classicism, knew that Epicurus and others had written natural philosophy in antiquity. So he joined the band of scholars who looked for ancient texts to edit, old ideas to revive, and classical heroes to emulate. To Gassendi, Konrad Gesner, Francesco Patrizi, Bernardino Telesio, and many others who used philology to search the ruins of Greece and Rome for their new science, a renaissance of natural philosophy seemed possible – for a while.[2]

But what actually happened to natural philosophy during the time called 'the Renaissance'? Little that was memorable enough to make the textbooks: Copernicus, Leonardo, Vesalius, and Tycho Brahe stand out from a crowd in which Ulisse Aldrovandi, Leonard Fuchs, Luca Pacioli, Erasmus Reinhold, Guillaume Rondelet, and many others remain inconspicuous. A closer look at the relevant events will muddle any picture of progress through well-defined periods.

In the century after Ficino died in 1499, some of the most admired natural philosophy was the work of unrepentant Aristotelians teaching a scholastic curriculum. At the height of the Italian Renaissance, Pietro Pomponazzi advocated a Peripatetic naturalism that seemed progressive to some, pernicious to others. What could be bolder than a clever philosopher doubting the rational grounds for belief in the soul's immortality? What could be more wrongheaded than a dogmatic Aristotelian justifying magic in clumsy Latin? Pomponazzi surely contributed to the rebirth and the renovation of learning, yet his remorseless Aristotelianism, his insistent occultism, and his considerable notoriety complicate the usual stories about the Renaissance.[3]

Pomponazzi was a doctrinaire Aristotelian who challenged Aristotle. His innovations came not only from newly recovered texts, including the Greek commentators on Aristotle, but also from contemporary thinkers who constructed original philosophical systems – among whom "our Ficino" had been prominent in the preceding generation of Italians. Pomponazzi also prized the autonomy of nature and the freedom of philosophy, bravely drawing the conclusions entailed by his principles, even when they led toward materialism, determinism, and other views likely to provoke the Church.[4]

He wrote several infamous books, two of them after having been called a heretic, arguing that Aristotelian philosophy flatly contradicts Christian dogma on demons and miracles. More than once he suggested that Christian teaching on these matters, just like some pagan accounts, was interested more in thought control than in the facts of nature. So thorough was his naturalism that he made religion itself – including

the three faiths of Judaism, Islam, and Christianity – an effect of natural causes. The age of Christian miracles was past, he concluded, or nearly past because the natural forces that explain apparent miracles had reached the end of a cycle. The same natural forces cause the wonders that simple Christians attribute to angels and demons when they fail to understand philosophy, whose purpose is "to find the cause of natural effects."[5]

Readers who found Pomponazzi's views progressive assured his place in the usual Renaissance tableau, which they furnished with such values as intellectual liberty and hostility to superstition. Plainly, a bearer of those dispositions who lived from 1462 to 1525 should qualify as a herald of the Scientific Revolution. Naturalism without regard for supernaturalist theology, determinism without regrets for moral freedom – those were attitudes that could prepare natural philosophy to honor the laws of nature that Kepler, Galileo, and Newton would proclaim. Such ideals and attitudes are all there in Pomponazzi's book *On Spells or the Causes of Natural Effects*, which was finished in 1520, circulated widely in manuscript, but not printed until 1556.[6]

But this book ends with a submission to ecclesiastical authority so complete, so abject, so out of keeping with 200 previous pages of close argument that some critics have dismissed it as merely expedient and disgracefully insincere. "Whatever has been affirmed by canonical scripture and universally decreed by the Holy Catholic Church," wrote Pomponazzi, "must be held entirely, firmly, definitively, inviolably, unshakably and without any trace of doubt." On one of the main points in question, whether demons and angels exist to cause wondrous effects, he declared that

> although such effects may occur naturally and, as a matter of fact, do occur without their help, nonetheless, if the Church has decided that something has been done by demons or by angels or by nature, one must hold exactly what the Church decides.... But if any human reason or authority – whether of Aristotle or of Plato or of anyone else – stands opposed, it is inadmissible, ... and if such things seem impossible to us, we do well 'to hold the mind captive.'

So much for the philosopher's liberty. The Latin in which Pomponazzi disputes at length and then surrenders theatrically reaches its stylistic peak in such moments as the leaden litany of allegiance just cited: *Quicquid affirmatum est*, he chants, *illud totum, firmum, ratum, inviolabile, inconcussibile et prorsus sine aliqua dubitatione tenendum est*. Rabelais could not have done much better. Even when Pomponazzi wrote books instead of *quaestiones*,

Figure 65. The Demon Belial Gets His Orders.
(Jacobus de Teramo [1483], sig. avi^{r})

his powers of organization seldom moved beyond the customary objections, replies, distinctions, and endless scholastic hesitations.[7]

In the last chapter of the book *On Spells*, where Pomponazzi summarizes his own views, he admits that "I seem to favor both sides in the foregoing," but he promises to clear things up lest "those who look into my work, such as it is, think me indecisive." The same chapter makes it clear that Pomponazzi's whole project – despite concessions to the Church and borrowings from novel or newfound sources – had been conceived as "Aristotelian thinking" (*ad mentem Aristotelis*), naturally enough for someone who spent his life professing just that philosophy. As an expert, he finds no room in Aristotle's system for angels, demons, or miracles. But he accepts the reports of odd phenomena that made others appeal to demonic magic and miracles, and – like other scholastic professors of his day – he accounts for these unusual effects with causes explicated in the Peripatetic way, as principles of natural magic and astrology.[8]

Is there a place for this other Pomponazzi – the committed Aristotelian whose philosophy keeps its distance from the new classicism while

embracing natural magic – amidst the usual Renaissance scenery? And how does a Renaissance that accommodates Pomponazzi's occultism connect with the age of scientific discovery?

Perhaps not at all. If the forces driving the Renaissance were merely aesthetic, rhetorical, and belletristic, if there was plenty of learning and scholarship but little empirical research or mathematical analysis, how could science thrive? When the arch-magus Ficino gave all of Plato back to Europe, a new kind of philosophy was on offer, threatening to displace the grand scholastic systems. With all such coherence gone, however, where to find a physics and a metaphysics for the new age? Lacking secure answers to that question – absent the old constraints and assurances of Catholic Aristotelianism – even Europe's best minds might be deluded by bizarre dreams of an even older pagan magic.

Progress, on this picture, comes from science, logic, and the critical spirit; the aesthetic spirit, rhetoric, and erudition are retrograde or even decadent – not to speak of the crimes of magic. Those sins against culture not only delayed the advancement of science for a century but also eroded the achievements of Aristotelian thought. But what to make of Pomponazzi – too famous a libertine to be ignored? Perhaps it was duty rather than conviction that made him an Aristotelian, or maybe he was poisoned by the same Neoplatonic virus that infected Ficino. Even so, Pomponazzi has no use for demons, at least as a matter of philosophical competence. His elimination of demons rests on a distinction between philosophically intelligible natural magic and demonic magic that must be taken on faith. The force of that opposition may elude modern critics whose instincts make it hard to accept that an intelligent and well-informed person of any period can have taken any kind of magic seriously.[9]

Another modern impulse, to blame the scholastics for everything retrograde in philosophy before Hegel, actually runs contrary to a different confusion: aligning Aristotelian with Cartesian thought on the side of clarity and rigor in order to extract both from the mire of Renaissance magic. If that account were correct, the Pomponazzi who assents to magic must have been contaminated by something un-Aristotelian, something woolly, unrigorous, and Neoplatonic. But conservative Aristotelians in the age of Descartes admired Pomponazzi as a bulwark of naturalism and a critic of superstition who thinks of natural magic not as credulous but as a normal part of natural philosophy and a weapon against naive supernaturalism.

Educated people in late medieval and early modern Europe believed in magic for reasons of three kinds: *historical, empirical*, and *theoretical*.

Their historical or doxographic or genealogical reasons were arguments not just from authority but from authority-as-tradition. The most influential doxographies of magic were variants on the ancient theology, putting Zoroaster or Hermes Trismegistus or sometimes Moses at the head of a line of ancient sages who made magic credible. Pomponazzi, although he mentions Zoroaster a few times in the treatise *On Spells*, was less impressed by primordial sages than by empirical evidence – including data that he took from texts, not from personal experience, after this evidence had been passed down in literary traditions almost never tested by the scholars who referred to it again and again.[10]

Having barred demonic magic from explanations of puzzling phenomena, Pomponazzi could either abandon the phenomena or save them on better Peripatetic principles. "How shall we preserve experience?" Having asked that question, he finds it

> neither safe nor respectful to make the usual claim of those who deny experience, that humans invented these things – like Aesop's fables – to edify the masses, or that they are tricks used by priests to grab money.… With this view I cannot agree, seeing that people of the weightiest authority and greatest distinction in learning, both recent and ancient, Greek and Latin and barbarian, affirm that they are entirely true.

Like other philosophers since classical times, Pomponazzi believed that certain objects – the magnet, the remora, the electric ray, the basilisk, and dozens more – have properties repeatedly confirmed by experience yet unexplained by the ordinary elements and qualities of scholastic matter-theory. Some, like the basilisk, we might call *textual* rather than natural objects; but others, like the magnet, are normal, tangible things whose veridical properties simply fall outside the scope of Peripatetic physics.[11]

Two such objects with enigmatic properties – the remora or *echeneis* (shipholder) and the torpedo or electric ray – caught Pomponazzi's attention. *On Spells* refers to one or both fish several times, and with good reason: Aristotle, Pliny, Albertus, and many other authorities known and unknown to Pomponazzi had certified and re-certified the astonishing faculties of these two fish over the course of two millennia, giving credit to the belief that a ray can stun its victim without direct contact and that a tiny remora can slow or stop the motion of a great ship. The two fish are natural objects, though the remora's identity was hazier than the torpedo's. Tradition had linked them ever since Pliny treated them as a pair and used them as examples of magical power. By modern standards,

reports of the ray's stunning effect were true, though badly explained, while tales about a ship-stopping remora were false. But the literary glue binding the two fish together and reinforcing their magic melted away only in the seventeenth century, while the torpedo resisted analysis and encouraged resort to occult qualities even later.[12]

Meanwhile, in discussing the production of occult phenomena by natural, non-demonic means, Pomponazzi reasoned that

> if a fish the size of your finger can hold back a loaded ship of two hundred feet or more, driven by wind and oar; if the torpedo-fish can stun at so great a distance with no sensible action; or the basilisk can infect so great an amount of air; and many such kinds of serpents do unbelievable things frequently described by philosophers and physicians; … then it seems to me that if demons do this by applying actives to passives, then humans can understand such things naturally as well, from which it also follows that many who were considered magicians and necromancers, like Peter of Abano and Cecco d'Ascoli, may have had no commerce with unclean spirits – indeed, with Aristotle they may have believed that demons do not exist.

The "actives" and "passives" that demons would need to work their wonders are found in nature, according to Pomponazzi: active magnets attract passive pieces of iron, just as a peony's magical action cures an epileptic patient. If demons can locate and exploit these natural objects, so can humans, and the resulting magic will be natural. Since demons can do nothing special for the strange cases that need explaining, Pomponazzi turns to a theory of natural magic.[13]

His explanation of magical phenomena has three components – psychological, astrophysical, and metaphysical – all within the limits of natural action. Such accounts had been developed by medieval philosophers and physicians, and Ficino had recently enriched them with Neoplatonic ingredients, producing his own influential theory of natural magic. To show how powers of the soul, influences from the heavens, and occult qualities of natural objects could explain many puzzling phenomena, Ficino had called on ideas long used by Christians to insulate magic from demonic influence. Even his tame and erratic naturalism challenged orthodox demonology, but he feared the demons and tried to keep them out of his magic. Moreover, his expert knowledge of Neoplatonism gave him incriminating information: not only are demons powerful, they are eventually and inevitably involved in every magical event. Pomponazzi's book *On Spells*, by contrast, shows no anxiety about demons; his theory of

magic – unlike Ficino's – is entirely and aggressively naturalist, expressly intended to make demons redundant.[14]

The psychological part of the theory appeals to faculties of the human soul, especially the imagination, which – in Pomponazzi's opinion – has the power to produce effects not just in the body of the imagining subject but also in other bodies. Physical vapors are the medium connecting subject and object, which explains why some people can heal others just by coming near them. "I find it possible that a man might have such a healing disposition," he maintains,

> just as rhubarb has the power to purge choler. Now rhubarb does not purge choler unless vaporized when activated by natural heat. And so it is that there are people who have such powers in potency, and when the force of imagination and desire works on them actively, that power becomes active and affects the blood and spirit, which seek release through evaporation and produce such effects. Reason and experience prove what I have said about this mode of action.

The psychology in this magic may seem like Ficino's, but a bolder naturalism rules here as well, always requiring that change of the relevant kind happens to bodies by contact action: "the soul produces these effects only by causing changes through vapors transmitted by it." The other two parts of Pomponazzi's theory focus on the astrology of celestial influences and the metaphysics of occult qualities – notions well established in normative scholastic sources, including works by Albertus and Aquinas frequently cited in the treatise *On Spells*.[15]

Albertus, Aquinas, and many other Christian philosophers, influenced by Aristotle and his Greek and Muslim commentators, believed that generation and corruption, the basic process of change in terrestrial objects, is caused or at least mediated by the planets and stars. As Pomponazzi sees it, all earthly change explicable by philosophy occurs when God's simple power descends through the celestial intelligences and diversifies into the forces that move the stars and planets, whose influences in turn account for physical variety and change on earth below. "As far as Aristotle is concerned," he argues,

> even though God is the cause of all things, nothing can happen in this sublunary world unless the celestial bodies mediate as the instruments required, *per se* and necessarily, for the making and preservation of these sublunary things.... Aristotle believed ... that a completely immaterial agent can have no effect of any kind on these lower things unless a body mediates between the eternal things and those subject to

> generation and corruption, as is obvious from *Physics* 8, *On Generation* 2 and countless other passages.

Scholastic authorities also accepted the doctrine of occult qualities as part of the hylemorphic physics and metaphysics of form (*morphê*) and matter (*hulê*), substance and quality, the key ideas behind the third component of Pomponazzi's theory of natural magic. Aquinas devoted a special study to magical qualities, *On the Occult Works of Nature* – though Pomponazzi doubted its authenticity – and Albertus discussed dozens of occult properties in his works *On Minerals, On Animals*, and elsewhere.[16]

On Spells replies to a physician who had asked if demons can cause magical cures. The answer begins by showing that demons, as spiritual beings and incorporeal, cannot heal bodies directly. All they can do is "apply actives to passives": to produce a cure, a demon must bring one bodily object, which is medically active, into contact with another body – the patient's – that can be affected by the curative body's activity, following natural patterns of action. Pomponazzi makes this account absurd by imagining demon-medics flitting about with their little black bags, "like surgeons or druggists, carrying packets or satchels or tiny sacks full of plasters and potions." Then he sorts curative substances into three classes: first, those that directly and manifestly alter the sensed qualities of bodies, making them more or less hot, cold, wet, or dry, as when fire heats water; second, those that do the same manifestly but indirectly, through an intermediary – like a vapor, as when rhubarb purges a choleric ailment; and third, those that affect bodies by "an occult and invisible alteration" with no change in manifest qualities, as when a magnet attracts iron.[17]

The magnet, says Pomponazzi, works without changing its own manifest qualities or those of the thing it attracts; it acts

> through an unknown insensible quality, as daily experience teaches and as happens likewise in almost countless cases. This hypothesis needs no proof because all universally recognize it.... There are occult powers almost without end.... Some who have knowledge of these actions ... cause certain effects that ordinary people believe to come from God or angels or demons when they see them but can find no cause for them because a cause of this kind works imperceptibly.... Hence, if someone sees the *echeneis*, a type of crab half-a-foot long, holding back a ship of more than two hundred feet with all its gear, would he not suppose it done by the power of demons or by a divine force? .... If someone goes numb whose finger touches a spear in contact with an electric ray,

Figure 66. Demons at the Deathbed, *Ars moriendi* Master E.S., before 1468. (Cust [1898], p. 25, Figure 2A)

> who would think that this happens because of the fish's nature when no means of producing such an effect is apparent? And yet these claims are quite true and based on experience, as Albertus reports … from the opinion of Pliny and other authors of the greatest repute.

Behind these few lines on occult qualities and their strange effects – so certain in Pomponazzi's mind that they need "no proof" – lies an intricate philosophical theory that is not the main issue in his treatise *On Spells*. He takes scholastic hylemorphism for granted, just as modern physicians and psychologists take the laws of physics for granted.[18]

But he resists the usual Christian demonology as failing in its account of demonic cognition: demonic magic, were there any such thing, would fall between two stools because the official dogma makes demons bad cognizers both of insensible essences (demons are not God or angels) and of sensible singulars (they are not humans). The magical peony-essence belongs to every peony, but to do magic, a demon will need cognitive

access to *that* particular peony in order to heal *that* patient. This the demons cannot do, he insists, because (lacking a material principle of individuation) they cannot know singulars: the key argument for ruling them out of magic is epistemic and psychological, and it shapes Pomponazzi's conception of natural magic. Up to a point, the scholastic rules authenticate the magus: natural magic is a genuine and productive science, "a real practical science, dependent on natural philosophy and astrology, just like medicine and many other sciences; it is intrinsically good and a perfection of the intellect."[19]

If anyone could really learn the magic of natural objects from demons and use it for evil, the learning and the practice would be sinful: the magic would be illicit in origin and application. But the *theory* of magic is blameless – even though a morally neutral theory can be applied for good or bad purposes. While acknowledging magic's practical risks, Pomponazzi gives it the same epistemic and moral status as medicine, another applied science used to do good and misused to do harm.[20]

But he also rules that some magic, even though it is real, is not the subject of a *scientia* (like natural philosophy) that can underwrite an *ars* (like medicine). Having scotched the illusion of demonic magic, he limits the real kind to three types that have "purely natural causes." The first results from "applying actives to passives" in order to produce "alteration" in bodies by natural means, as when an active magnet alters a passive piece of iron, in roughly the same way that a small remora alters a large ship. Every remora and every magnet has this strange power, which belongs to their species and – following the scholastic analysis – can be traced to specific or substantial forms, making the power intelligible, even though it is imperceptible or 'occult.' The physical and metaphysical principles behind this analysis apply to the whole universe, regulated by "the science of nature and astronomy."[21]

Pomponazzi classifies a second and a third type of magical phenomena as real yet outside the scope of science because the events in question are purely singular. The second type comes not "from the whole species but from the matter of an individual," as when a magical drug heals this person but not that one, unpredictably, depending on individual peculiarities – the drug's or the person's – that escape generalizations. The causes of such idiopathic phenomena, which are no more or less occult than the causes of magnetism, elude rational analysis because they are nothing but singular. Real but intractable magical phenomena of the third type are effects of imagination: they occur because "a thing imagined and desired can be produced in reality by powers of imaging and

desiring," though a person's "power of imagining disposed in this way is not subject to rational analysis" – again, because the data are just singulars that cannot support generalized, scientific reasoning.[22]

Magic is like medicine for Pomponazzi: he takes the data on good faith to be genuine, though not all the data can be turned into science. Medicine was one subject – law was another – that shaped the curriculum at the universities where he taught natural philosophy. Having put natural magic alongside the secular professions of medicine and law and having made it part of official academic philosophy, he concludes that "if anyone considers the occult and wondrous works of nature, the powers of the heavenly bodies, God, and the intelligences as they watch over all lower and human things, there is no need for demons." Celestial forces, imagination, and occult properties can explain any phenomenon that otherwise befuddles natural philosophers, physicians, and other learned people, yet lies within the scope of their inquiries.[23]

Although Pomponazzi's occultism was part of his Aristotelian naturalism, some of his admirers have tried to explain it away, seeing it as something impure in a Peripatetic ontology that ought to be free of such pollution. To be sure, Aristotle himself has little if anything to say about magic, demons, or astrology as such – a silence that Pomponazzi himself addresses. And he borrows from Ficino and the Greek commentators in order to correct and augment Aristotle. But Aristotelian philosophy as Pomponazzi learned and taught it – without reference to anything outside the Peripatetic tradition – had long since invented its own theory of magic, whose premisses were inferences from texts of the Aristotelian Corpus, many of them cited in the book *On Spells*.[24]

Consider an analogy: Aristotle never heard of the Christian eucharist, but Aristotelian thinkers like Aquinas accounted for the eucharistic mystery in Aristotelian terms. Likewise, no Aristotelian text insists on the immortality of the individual human soul, yet Christian theologians like Aquinas found Aristotelian reasons to declare themselves immortal. The same holds for magic, whose theory is grounded in the same scholastic metaphysics used to defend the real presence and personal immortality: the hylemorphic doctrine of substantial forms and accidental qualities – including occult qualities.[25]

When Descartes was in his early twenties and Giulio Cesare Vanini was burned at the stake in Toulouse, the charges against Vanini included his appropriation of Pomponazzi's naturalism – an Aristotelian naturalism. A little later, when Descartes attacked the Aristotelian system on many fronts, he had to contrive a peace with its physics and metaphysics

or else leave the contest undecided when the issues were sacrosanct: the sacrament of the altar and the fate of the human soul. Retaining some vestiges of hylemorphism to preserve the soul or the sacrament was a tactic of innovators who, for other purposes, abandoned Aristotle's forms and qualities. After Mersenne, Gassendi, and Descartes, however, few wanted to rescue magic by hedging on Peripatetic principles.

On the contrary: opponents of traditional natural philosophy belittled Aristotelian forms and qualities just because they were the main theoretical grounds for a belief in magic that had become disreputable. When the soul or the eucharist was at stake, pugnacious anti-Aristotelians retreated; otherwise, Peripatetic natural philosophy was fair game, and the quarry was conspicuously weak in its attachment to natural magic. In that climate, post-Cartesian critics ended magic's career as an object of serious philosophical inquiry. But they understood that the real culprit was Aristotelianism itself – not some Neoplatonic miasma from outside the system. The enemies of magic who finally took it off the philosophical agenda – Mersenne, Gassendi, Descartes, Hobbes, Boyle, Locke, and others – found Ficino's Neoplatonism irrelevant. Peripatetic natural magic was the greater villain by far.[26]

The natural magic that these innovators stripped of philosophical cover was the magic that Pomponazzi had defended early in the previous century as an adjunct of Peripatetic natural philosophy. So what should we think of Renaissance philosophy if one of its great minds and famous heroes used traditional Aristotelianism to protect something now as discredited as magic? If the Renaissance lies on a vector that runs from 'primitive' to 'modern,' and if magic is primitive, anti-progressive, and recidivist, it will be hard to bring Pomponazzi into focus. If he belongs to a Renaissance bent on destroying Aristotelian philosophy, the image blurs even more. But if we see the Renaissance as energized by recovered and revised ancient sources, including more and better Aristotelian texts read with the help of improved commentaries, maybe we can look back at Pomponazzi a little more clearly and see his Renaissance for what it was: a rebirth of natural philosophy that encouraged natural magic by grounding it in eclectic Aristotelian thought.

2 AGRIPPA'S MAGIC MANUAL

Isaac Newton spent much of his private life looking for the philosopher's stone, but the secret was slow to come out. When he died in 1727 and it came time for the French Académie to publish an *éloge*, the task fell to

Bernard de Fontenelle – Newton's correspondent, the Académie's permanent secretary, an indefatigable publicist of enlightened science and an implacable enemy of magic. Fontenelle knew about Newton's alchemy but ignored it, leaving the news that he was "the last of the magicians" for much later, until after World War II. Attitudes had been different in 1506: after Marsilio Ficino died, a biographer made no bones about his fame as a magus. Fontenelle's silence about Newton's hunt for the elusive "Greene Lyon" was deceptive, but kind to his memory. For the inventor of calculus and the architect of a new physics to have toiled at alchemy would have made him ridiculous. Magic, a sublime object of wonder in the Renaissance, was becoming a vulgar object of mockery in the Enlightenment.[27]

Writing a few years after Ficino's biographer, one expert on magic insists that its name is an honorable one, abused only by the wicked and ignorant, especially recent critics who have defamed it as superstition, heresy, crime, or mere trickery. To restore its true dignity, which philosophers and theologians had confirmed, he consults the ancient sages who first revealed the sources of magical power. Although magic will attract the curious along with the wise, there are deeper reasons to investigate and use it. This is the case made for magic by Henry Cornelius Agrippa von Nettesheim, writing around 1510 to introduce his notorious handbook of magic, *On the Occult Philosophy*.[28]

Agrippa's occult philosophy soon circulated in manuscript, though a complete text was printed only in 1533, over the complaints of Dominican inquisitors. By that time, he had also published an extravagant polemic against all the arts and sciences, both exoteric and esoteric, maintaining that faith rather than worldly knowledge is mankind's only hope. Earlier he had intervened in a witchcraft trial – by defending the accused on points of law, however, not by denying the possibility of the charge. He saved an angry attack on the inquisitors for a chapter of his declamation *On the Uncertainty and Uselessness of the Sciences* (1526), which regrets and rejects but does not refute the arguments made in *De occulta philosophia*. In fact, this fideist blast at reason and learning offers essentially the same definition of natural magic presented in the earlier work. Natural magic is

> the pinnacle of natural philosophy and its most complete achievement.... With the help of natural virtues, from their mutual and timely application, it produces works of incomprehensible wonder.... Observing the powers of all things natural and celestial, probing the sympathy of these same powers in painstaking inquiry, it brings into

> the open powers stored away and lying hidden in nature. Using lower things as a kind of bait, it links the resources of higher things to them … so that astonishing wonders often result, not so much from art as from nature.[29]

Natural magic is the first of three parts of Agrippa's occult philosophy, the other two being *mathematical* and *ritual* magic. The plan of his book reflects the three levels of his cosmos, where causality runs from above to below, from Ideas in God's mind through spiritual intelligences and heavenly bodies to animals, plants, and minerals beneath the Moon. Humans can ascend by the same routes that the divine energies travel on their way down to earth. Magicians attract powers from on high by manipulating a hierarchy of qualities, quantities, and minds: *qualities* in objects made of the lowest earthly matter; *quantities* in these same lowly things and in nobler objects made of celestial matter; and immaterial angelic *minds*, free of all bodily quality and quantity. For the lowest *elementary* world, qualities called 'occult' or hidden are the magician's most effective instruments, while figures or shapes are the best tools for the middle *celestial* world and ceremonies are right for the highest *intellectual* world.[30]

Agrippa's ambitious theory of magic covers all three worlds, even the divine, fusing them with currents of power. Just as forms flowing from God's mind reach down to the lowest material objects, so elements and qualities of matter rise up, ever more refined, enabling material energies to suffuse the whole hierarchy. Binding it all together is spirit, not quite matter and not quite mind, the perfect vehicle for exchanges of power between bodiless and embodied things. In one sense, the whole is embodied, through sympathies and similitudes, but in another sense, and through the same forces, it is ensouled.

A world-soul mirrors the human soul, which is itself a focus of *spiritual* or *psychological* magic, especially through its faculty of imagination, working on the self and on others. Some other souls are also human, but some are angels and demons, unencumbered by bodies and therefore very powerful. To activate the links among minds, souls, spirits, and bodies, the occult philosophy starts with *natural* magic, using objects made of earthly matter, but it may end as *demonic* magic, conversing with evil spirits and inviting condemnation by the Church. Witches use both types of magic for their spells, where popular and learned magic mix in Agrippa's system.[31]

Pagans and Christians had been testing the boundary between natural and demonic magic for two millennia by the time Agrippa wrote. He knew the risks, which helps explain his passionate recantation of magic

as he witnessed the turmoil of the Reformation. Nonetheless, his case for a learned, philosophical magic is more compelling than the oratory that he turned against it. His occult philosophy is systematic, comprehensive, and grounded in authority and evidence, though it is not original. It is a vulgarization of the great revival of ancient magic begun in the previous century by Ficino and continued by Giovanni Pico, Johann Reuchlin, and others – including Pomponazzi, whose work on spells had been completed, but not printed, before Agrippa's book was published.[32]

Agrippa copied, digested and reorganized the historical, theoretical, and empirical arguments for magic made by Ficino and others, presenting them in handy form. But by the time an English *Occult Philosophy* appeared in 1651, proponents of a new science had started to turn against traditional wisdom and the magical principles derived from it. The reflexive deference to antiquity that gave magic its historical stability was falling out of fashion, inviting people to look beyond the old texts and more closely at the world – including a new world across the ocean. The choice of theory also shifted toward empiricism and atomism, away from the physics of qualities and its metaphysical foundations.

Until Bacon, Galileo, and Descartes forced these changes, however, a learned occultism thrived through the end of the sixteenth century, only then starting a slow and erratic decline. Relentless hostility to the old philosophy, ridiculing substantial forms and occult qualities as emblems of moribund scholasticism, had the desired effect, but not quickly or clearly. At the end of the seventeenth century, ideas promoted by Agrippa were still in play for Leibniz, who knew how disreputable occult qualities had become when he accused Newton of multiplying them.[33]

Meanwhile, advocates of magic found Agrippa's book indispensable, and so did its enemies. Paracelsus disapproved but used it. Jean Bodin and Martin Del Rio condemned it bitterly, while Giordano Bruno borrowed Kabbalah from it, John Dee adapted its angel-magic, and Giambattista Della Porta learned about mathematical magic and optics. Marlowe's Faustus wants to be "as cunning as Agrippa," and the book that Shakespeare's Prospero vows to drown is either Agrippa's or one very like it. But Bacon, Shakespeare's contemporary, called Agrippa a fool; he was more in tune with his time than Tommaso Campanella, the last great thinker to focus his genius on magic. From the first, Agrippa seemed silly rather than subversive to some critics: Rabelais mocks him as a pompous ignoramus whom even the devils would not want to serve. Diabolical to some but just dotty to others, his book made a hit because it was a good summary, a compendium of what came to be called 'occultism': not

only natural, spiritual, and demonic magic, but also alchemy, astrology, Kabbalah, divination, ritual, theurgy, and witchcraft.[34]

Details are the meat of Agrippa's manual, empirical details to confirm magical theory. Of special interest to him are phenomena long regarded as mysterious because they seemed strange and unaccountable, their mechanisms unknown, their effects too fast, their powers too strong by common standards: the magnet, carbuncle, heliotrope, peony, tarantula, basilisk, dragon, electric ray, ship-stopper, and hundreds of others. The story of magic turns on the credibility of those magical objects. When new ways of seeing the world and new ways of picturing it were devised between 1400 and 1600 (more or less), they became tools for critics who – in the end – made the occultist tradition and its magical objects a laughing matter.[35]

Without a theory to explain them, Agrippa's long lists of magical objects would have been just lists. Encyclopedias, lapidaries, herbals, bestiaries, and books of secrets as well as works on alchemy, astrology, medicine, pharmacy, and sorcery had recorded magical data for centuries. But there was no good way to organize the data as long as the most enthusiastic voices of magical theory, the ancient Neoplatonists, remained faint – until just before Agrippa wrote, when Ficino, Pico, Pomponazzi, and others developed their philosophical conceptions of magic, using the most authoritative metaphysical, physical, and cosmological ideas accessible to them. Agrippa profits from this theorizing. Although personal experience and popular culture confirm his account of magic, the project is explicitly learned and philosophical – an erudite occult *philosophy*.[36]

Because natural magic relies on natural philosophy, Agrippa starts with an exposition of physics and matter-theory – mainly Aristotelian in its concepts, terminology, and framework but also Neoplatonic. He begins with fire, air, water, and earth – the four elements – and their qualities, both manifest and occult. The elements themselves are magical. Fire works for ritual magic by attracting good spirits of light. Earth, implanted celestially with seminal forms, generates worms and plants spontaneously. Air transmits celestial influence and reflects the forms of natural objects, producing telepathic powers that Agrippa himself has mastered. And "the wonders of water are countless," even in the Gospel, where an angel stirs a pool of water to cure the incurable. Other powers inhabit the composite and mixed bodies made of the four elements.[37]

The primary qualities of the elements – manifest as hot, cold, wet, and dry – give rise to secondary qualities that account for softening and hardening, retaining and expelling, attracting and repelling, the

many physical processes studied by physicians and natural philosophers. Secondary qualities then act on the parts of bodies to make tertiary qualities, all the while producing natural and artificial wonders, everything from unquenchable fires to perpetual lamps. Primary, secondary, and tertiary qualities all emerge from matter, while other qualities, called 'occult,' come from specific or substantial form – the form that makes a thing a substance by itself, a self-standing individual, and locates it in a species or kind. Since occult qualities are closer to intangible forms than to bulky matter, they produce effects out of proportion to the size of the objects where the hidden qualities reside. These causes of magical effects are imperceptible and come from imperceptible forms, which is why the qualities are *occultus* or 'hidden.' They are hidden from the five senses, resistant but not impervious to rational analysis and discoverable by experience, which finds them everywhere: stones singing in the earth, tiny fish stopping great ships in the water, birds of the air eating iron, lizards living in fire.[38]

Forms descended from God's Ideas and seeded in lower nature reflect the figures of the stars and imprint them as characters or seals on natural objects: "every species has a heavenly figure to match it, from which a wondrous power of action also comes into it." The forms that produce occult qualities are celestial, marked by signs that the magus can detect, just as the astronomer can read the stars and planets. In Agrippa's catalog of planetary signatures, one type is saturnine – earthy and watery in its elements, melancholic in humor, sympathetic with lead and gold, with sapphire and the magnet, with mandrake, opium, hellebore, and dragon's wort, with "crawling animals that keep to themselves, solitary, nocturnal, gloomy, … slow-moving, eating filth, consuming their young, … the mole, ass, wolf, hare, mule, cat, camel, bear, pig, monkey, dragon, basilisk and toad."[39]

The many such lists in Agrippa's book have a practical purpose. The magician who knows that "the dragon-plant is under Saturn and the celestial Dragon," for example, can use this information to attract or repel saturnine influence. Natural objects imprinted with forms by the heavens, signed with celestial seals, and charged with occult power are tools of practical magic for the magus to discover and use, concentrating them to attract one influence, separating them to avoid another, creating congruities or incongruities to induce or repel a selected form and make matter fit or unfit to receive it. Up to a point, this happens within nature's domain, which extends through the elementary and celestial levels of Agrippa's world. His various devices to make magic – amulets, rings,

charms, drugs, unctions, potions, lamps, lights, fumigations – can, in theory, be wiser, deeper, secret ways to use natural objects.[40]

But Agrippa's world is a continuum, where bodies link sympathetically with minds and nature merges into supernature through the medium of spirit and the transmission of forms.[41] One of the many pictures in Agrippa's book, showing a dragon, illustrates the risks of magical continuity, which lets demons slip into the magician's practice. Summarizing earlier literature on astrological images, Agrippa notes that its authors

> made an image of the Moon's Dragon with Head and Tail, an icon of that serpent between circles of fire and air.... They made it when Jupiter and the Head ruled the middle of the sky, ... and through this image they wanted to signify a good, lucky demon, depicting its image with serpents. The Egyptians and Phoenicians thought this animal divine above all others ... [because] its spirit is sharper and its fire fuller.... But when the Moon was eclipsed in the Tail or badly situated with Saturn or Mars, they made a similar image of the Tail to cause anxiety and weakness and bring on bad luck, and they called it an evil spirit. A Jew put an image like this on a belt of gold and jewels, which Blanche, daughter of the Duke of Bourbon, gave to her husband Peter, King of Spain, ... and when he put the belt on, he seemed to have a snake around him. When the magic power implanted in the belt was discovered, he rejected his wife because of it.[42]

Since angels and demons rule the upper stories of Agrippa's sympathetic cosmos, while stones, plants, and animals are in the basement but within reach of higher powers, the magus who taps the forces hidden in natural objects runs the risk of attracting supernatural attention, benevolent or malevolent.

Medieval texts – the bestiaries – had put the fearsome dragon alongside gentler beasts: some we still find in nature; others we exile to fiction or myth. In the occult philosophy, many are magical objects, like the dragons described by Ficino and Agrippa. They are ruled by celestial bodies and places (Draco, Serpentarius, the nodes of the Moon winding through the ecliptic) and by supercelestial forms, materializing on earth not only as the dreadful winged reptile but also as plants (*dracontea, dracunculus, serpentaria*) and stones (*lapis draconitis*), all linked by chains of similitude and sympathy. Ficino experimented with a stone taken from a dragon's head in India, watching it move when he poured vinegar on it and concluding that it could draw power from the heavenly Dragon. The saturnine Dragon's Tail was known to bring long life to people in India, though Ficino was wary of praying to God when Jupiter was in

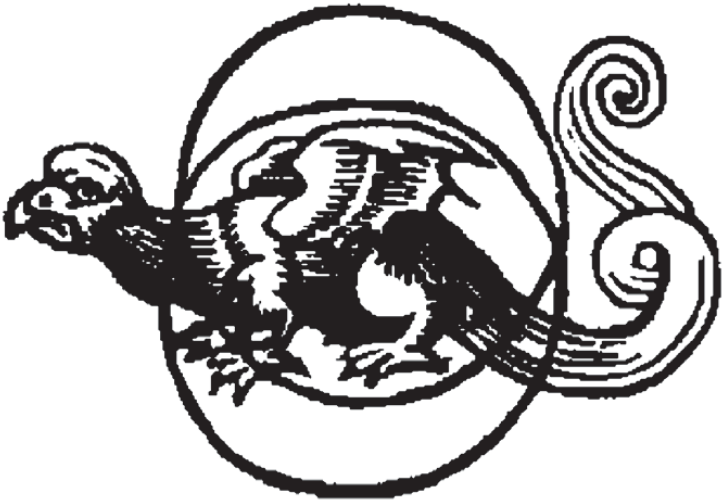


Figure 67. Agrippa's Dragon.
(Agrippa von Nettesheim [1600], I, 272)

the Dragon's Head, which he identified with the fallen Lucifer. He was more cautious than Agrippa about the magic in natural objects, which are enchained to devils as well as angels.[43]

3 LEONARDO'S DRAGONS

If readership were the criterion for calling some famous figure 'the Magician' of the Renaissance – in the way that medieval people called Aristotle 'the Philosopher' – the title might go to Agrippa. But Lynn Thorndike, writing before World War II, awarded it to Leonardo da Vinci, following a lead suggested by Giorgio Vasari, who produced the first history of art. Now, in light of more recent scholarship, should we still think of Leonardo as a wizard – like Ficino or Agrippa or the witch that Agrippa defended?[44]

Leonardo condemns some occultist beliefs as plainly stupid: "sorcery, alchemy's little sister, … is a banner flapping in the wind, guiding the idiot mob." Since he also calls alchemists "lying interpreters of nature," his even lower opinion of sorcery (*negromantia*) is harsh indeed. He mocks books on the magical arts for claiming "that incantations and spirits are effective … and that men are changed into cats, wolves and other animals." The codex that preserves these words records an aggressively materialist

account of spirit, as far from orthodox theology as from Ficino's speculations on spiritual magic. The success of Ficino's ideas, their accessibility even in the vernacular, would have made them hard for Leonardo to avoid, though we have few clues to any of his reading. More in evidence is his contempt for credulity, the fierce empiricism that drove him to question conventional beliefs, such as the existence of bodiless spirits.[45]

Had Leonardo wanted to believe in magic, the experts offered him many reasons – not a few of them empirical – to reinforce the habits of popular culture. But learned accounts of magical objects textualized them, detaching and distancing them from the direct experience that Leonardo prized. Authorities honored as ancient and renowned as wise had recorded, discussed, amplified, and confirmed the magic in these objects for centuries. Naturalists classified them. Philosophers debated them. Physicians prized their curative powers. Poets used them as images and rhetoricians as moral types. As written tradition transformed and magnified their textual identities with the new print technology, the magical objects seen in books needed their physical analogs less and less. Agrippa's *Occult Philosophy* catalogs the results of these bookish transformations.[46]

When philologists looked at magical objects, they often saw textual problems and attacked them as critics and editors. But erudition left magic intact: faced with Pliny's ancient encyclopedia, for example, and its mass of evidence for magic, most classicists wanted to strengthen Pliny's authority, not weaken it. Taking up where philology left off, erudite natural historians cited the improved texts, reconfirming the ancient learning that authenticated magic. Relying more on old books than on new observations, the best philology could do was to expose errors in the texts, a sure solvent of belief but a slow one. Meanwhile, some appeals to personal experience actually reinforced the old tales with current examples. Curious about the odd behavior of magical objects, writers of every stripe joined the natural historians in devising ingenious explanations. Few anticipated Montaigne's advice to verify the facts about magic before trying to explain them.[47]

In the bookish culture of the sixteenth century, magical objects were hypertextualized. And for a long time there had been no effective requirement in European natural history that what a text claims should correspond to what the world discloses. With no strict regime of correspondence between objects described in books and objects seen in nature, the textual manifestation of magical objects came not merely to represent the evidence but actually to constitute the evidence, whether

recorded in words or displayed in pictures. Since antiquity, pictures like those in Agrippa's book had worked together with words to authenticate magic. The new technology of printing vastly enhanced the partnership by multiplying, stabilizing, and disseminating images on the printed page. New techniques of picturing (perspective, shading, woodcuts, engraving) dazzled the eye with magical sights seldom seen before, enabling them to be broadcast in books, posters, and prints. Through the sixteenth century and after, as magical objects proliferated in word and image, the new art helped the new learning make them more credible.[48]

This phase of the pictorialization of natural history started about half a century before Leonardo – a champion of the empirical – painted Cecilia Gallerani, Ludovico Sforza's mistress, when he worked at the Sforza court in Milan in the 1480s. Cecilia's portrait may be the first great picture in Western art to capture a living instant of personality – not just hers but also the ermine's, cradled like a diminutive panther at her breast. Why an ermine? Agrippa says that its mercurial virtue restores sight, improves the mental faculties, and makes an excellent hate-potion. But Leonardo's mind was on pleasing his patron, not on recipes for magic. Ludovico used the ermine in his heraldry, and its Greek name, *galê*, chimes with Gallerani.[49]

While in Milan, Leonardo compiled a bestiary where the ermine is a symbol, a sign of moderation: he was copying a medieval manual, the *Fior di virtù*. Following a tradition that goes back to late antiquity, this handbook of virtues and vices uses natural objects, animals in particular, to exemplify moral qualities. The camel is continent, the unicorn intemperate, and the magical basilisk is cruel. Moderation "may be compared to the ermine.... When hunters want to catch him, they put mud around his hole ... and he runs away. But when he reaches the mud, he lets them catch him rather than get himself dirty. Such is his gentility." And such was Leonardo's tribute to a strong man's mistress.[50]

Leonardo's bestiary is a file of allegories and emblems, a court painter's stock in trade. He learned other lessons from Cecco d'Ascoli's *Acerba*, one of the books condemned to be burned with the astrologer in 1327. Cecco's poem describes the dragon, greatest of all serpents and famed among magicians, as armed with a poisonous tail and monstrously cruel; when the dragon bites the elephant, however, the huge beast crushes the venomous reptile as it falls to its death. Leonardo saw the moral in Cecco's verses: even righteous vengeance is hurtful. Cristoforo Landino's translation of Pliny told the same story and described more fantastic animals – the down-looker, basilisk, spear-snake, and ichneumon – but

drew fewer moral conclusions. Leonardo's bestiary lists over a hundred biological species, and alongside them, undistinguished from the others, fourteen imaginary beasts, some of them magical.[51]

As Leonardo put his bestiary together, he was thinking about painting and poetry, both of which convey moral ideas. He also left written instructions for the allegories that take visual form in some of his drawings. Other drawings – his dragons, for example – carry no moral freight. But magical dragons and allegorical elephants share a genealogy, not through the origin of species but from a "fantastic zoo," the bestiary. They are as much textual as biological – sometimes textual and nothing more. Did Leonardo see these unreal animals as we see them, off the edge of empirical taxonomy, in a space like the fictive margins of old maps, the places where "there be dragons"? Thorndike, always stingy with Renaissance heroes, is sceptical: if medieval natural history was retrograde, loaded with magical fantasy, so was Leonardo's vaunted science.[52]

What was that science? Would it put magical dragons and basilisks alongside convincing ermines and persuasive horses? Clearly, Leonardo's approach to painting caused him to investigate nature in a way that exceeded any needs of his craft, and many modern critics have thought of his art as a science. Vasari, closer in time to Leonardo, had different concerns. Describing the divine painter as driven to understand his art like none before him, he added that Leonardo "began many things and finished none of them.... So many were his whims that in philosophizing about natural things he applied himself to understanding the properties of plants and went on to observe the motion of the heavens, ... perhaps more a philosopher than a Christian."[53]

What did Leonardo apply himself to? Since no one joined science with art more effectively or theorized more about their conjunction, the question is worth asking. He wrote critically about *scientia* as "mental discourse," claiming that there is no experience in purely mental sciences and hence no certainty. If the only product is mental or verbal, science is stillborn; empty debate is its only fruit. "Where reason is lacking, screeching takes its place," he argued: "true sciences are ... brought in through the senses, and then the tongues of the contentious are silenced, ... which the lying mental sciences cannot do." The ancient poet Horace made painting a paradigm of his verbal art – *ut pictura poesis, 'poetry is like painting'* – but Leonardo saw poetry as anti-paradigmatic for his pictorial science. "Painting overcomes poetry in depicting facts.... It does not talk but simply shows itself." Painting has its mental component, its "scientific

principles," but it also creates an object more concrete and convincing than the poet's words.[54]

"Poetry … puts things in the imagination," he argues, "but painting puts them as they really are outside the eye, … [as] if they were natural," using a "visual power" (*virtù visiva*) stronger than any words. Confident of his ability to represent nature, Leonardo achieved the pictorial control of natural objects that was already legendary for Vasari. But his probing of nature goes where Vasari cannot follow, leaving him to find some of Leonardo's work unpainterly – his inquiry into the qualities of plants, for example, which the lesser painter and critic calls whimsical.[55]

Vasari has more sympathy for the urge to create, the godlike instinct not merely to represent nature but to make it. He describes Leonardo's drawing of "a Neptune … that seemed completely alive … , the stormy ocean, the chariot drawn by sea horses with phantoms, sea monsters and winds." The birth of this drawing out of an enchanted imagination detracts nothing from its realism for Vasari, who admires the *vivezza* of the sea but also the lively monsters in it. Wind and water are ordinary natural objects, proper objects for a painterly *scientia* that puts their images before the eye exactly and naturally. But horses swimming in the sea with dragon's tails? Where does this phantasmagoria fit in Leonardo's science?[56]

In order to make a terrifying image for a shield, as Vasari tells the story, the young Leonardo took "green lizards and other ones, crickets, snakes, butterflies, locusts, bats and many more strange kinds of animals that he put together in different ways and got a creature that was absolutely horrible." Vasari's account matches instructions that Leonardo left for inventing animals:

> You cannot make any animal unless each of its own limbs by itself resembles a limb from one of the other animals. Thus, if you wish to make an animal that you have devised seem natural – a dragon, let's say – take the head from a mastiff or hound, the eyes from a cat, the ears from a porcupine, the nose from a greyhound, the brow from a lion, the temples from an old rooster, the neck from a water-turtle.[57]

And Vasari tells another story, that Leonardo actually assembled a little living dragon:

> On a very peculiar green lizard … he put wings made out of scales taken from other lizards … so that they quivered from the movement when it walked; he made eyes, a horn and a beard for it, tamed it and kept it in a box, and it made all his friends run away afraid when he showed it to them.[58]

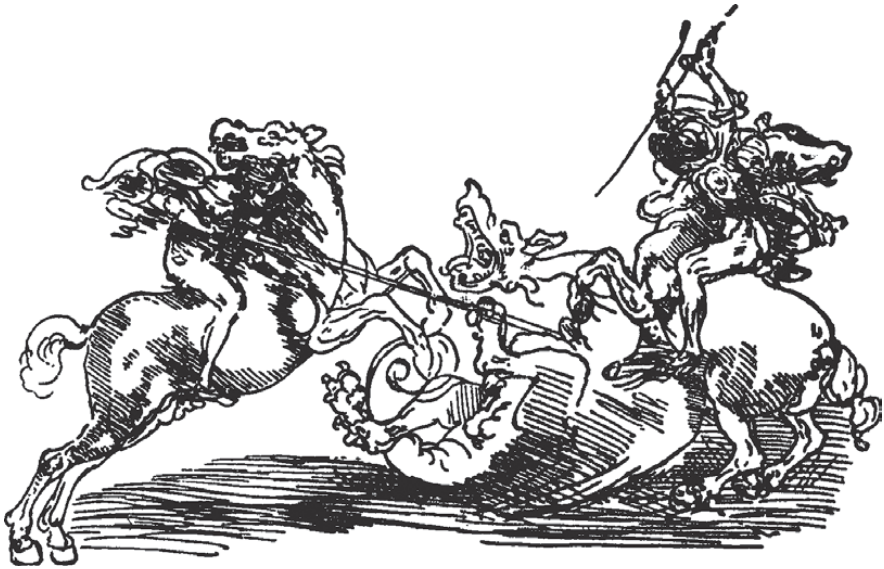


Figure 68. Richter's Sketch of Leonardo's Dragon Fight.
(Richter [1883], I, 283)

Dragons also animate his drawings and paintings. The background of the *Adoration of the Magi* shows two riders in combat: their horses have long been admired as statements of equine anatomy. Yet Leonardo had originally conceived these two believable animals as battling a dragon. Ancestors of the unpainted dragon emerge from his zoological assemblages, with wings, wolfish heads, leonine legs, and serpentine tails. Other drawings show figures of dragons flowing from forms of cats or horses, linked to heraldic griffins and schemas from pattern-books. And behind these animals lie the fictions of the bestiary, that storehouse of magical objects. What is the relation of such concocted creatures to objects that "really are outside the eye"? Since the status of the image in Leonardo's theory of scientific painting depends on exact likeness to natural, extra-mental objects, the question is important.[59]

Horace, who said that poetry is like painting, supplied a counter-image to pictorialize a rule of aesthetic congruity:

> If a painter picked a human head to sit
> upon a horse's neck and then on limbs,
> hither and yon, stuck varicolored feathers,
> letting the lovely girl on top degrade

Figure 69. Cats, Lions, and a Dragon by Leonardo.
(Royal Collection Trust from Bridgeman)

down below into a black, disgusting fish,
you couldn't help laughing, could you,
if you had a private look?

From Horace and Aristotle, Renaissance readers took a learned and decorous aesthetic that drifted far from Leonardo's "representations true in fact." Actually, his theory of painting was not so much an aesthetic as a methodology, as much science as art. His goal was to represent what nature offers, not just nature's beauties: "If a painter … wants to see monstrous things, … he is their master and god." But the *scientia* and *pittura* that are nearly the same for Leonardo are not what we mean by 'science' and 'painting.' His *pittura* is not simply aesthetic, his *scientia* not exactly scientific. Not yet disenchanted by abstraction, Leonardo's *scientia* is still charmed by the undiscriminated experience that Bachelard calls the first obstacle to scientific understanding. Its practitioner is neither the whimsical wizard described by Vasari nor a prophet of 'science' in our sense.[60]

Later taxonomies of human understanding put a gap between science and art, and taxonomies are historical artifacts uncovered by archaeologies of knowledge. One particular taxonomy (Foucault calls it an *épistémè*) has been traced to the time when the new science abandoned

natural history – and natural philosophy – in the Renaissance style. On Aldrovandi's sumptuous pages, says Foucault, nature was a set of texts to be read, not a field of objects to be observed. The human eye, not yet a scientific eye, became an organ for observing rather than reading only after critics disjoined language from nature and treated linguistic signs as means of representing things, no longer as parts of things. In Foucault's intricate argument about words and things, a central topic is magical thinking in the older *épistémè*, when scholars still read the world, and its decline in the seventeenth century, when the world came to be observed.[61]

If reading nature instead of observing it preserved a textual *épistémè* and kept the world enthralled by magical objects, Leonardo's achievement was to picture the world as it was given to him visually, neither reading it through the spectacles of erudition nor observing it through the (yet uninvented) instruments of science. Perhaps he really meant painting to be the primary scientific act. Now we keep art secluded from science, shutting the dragons of art in the quarantine of fantasy. No longer taking our dragons seriously, we may assume that Leonardo's contemporaries felt the same about theirs, that they saw allegories, grotesques, and zoological composites as pictorial fictions with no better claim on reality than the repulsive agglomeration that opens Horace's poem. Given what Leonardo wrote on behalf of painting and against poetry, however, a different understanding of magical art and scientific pictures suggests itself.

Leonardo's polemic against words is hostile to the philological natural history of the Renaissance, which was a festival of words. But his credible images of incredible animals were not made by a scientific way of seeing, the lynx-eyed scrutiny that eventually, after much hesitation, chased the dragons out of natural history and purged it of magic. Our categories of art, myth, allegory, fiction, history, science, and magic sort objects into grades of reality and unreality. Where we see dragons never seen in nature, we know that the scene is not science or history, but where we see other unseeable things – black holes, strings, quarks – we assume that no art or magic lurks. As a triumph of naturalism, Leonardo's art moved away from magic, myth, and allegory toward scientific observation. But the movement was not simple, inevitable, or complete.[62]

Art in Leonardo's manner helped people used to reading dragons in the world to picture them as well, and the plausibility of such pictures, which are windows into a world of magic, is hard to distinguish from the *vivezza* of other natural objects skillfully drawn and painted. This was Leonardo's two-faced wizardry: he stocked his cabinet with natural and

magical objects alike, painting the one as expertly as the other and thereby sustaining the occultist tradition while also showing a way out of it.[63]

4 VIRTUES DORMITIVE AND VISUAL

After Leonardo died in 1519, books about magic poured from the presses – some of them more richly illustrated than Agrippa's. In the next century, when Galileo was shamed and witches were still burned, the flood of magic books kept coming faster. Yet something changed. Before 1600, reputable intellectuals took magic seriously, putting it at the center of their work: just in Italy one thinks of Ficino, Pico, Pomponazzi, Porta, and Bruno, with Campanella an isolate in the new century: by the time he published his most important work on magic in 1620, few figures of his stature were still writing such books. Robert Fludd, Athanasius Kircher, Jean Baptiste Morin, the two Van Helmonts, Henry More – these authors of occult philosophies were prominent but not eminent intellectuals, and the tide had turned against them. Galileo, Descartes, Boyle, Locke, Newton, and Leibniz were decisively on the other side – at least in public.[64]

As telescopes and microscopes disclosed things about the world never seen before, magic was becoming merely funny, no longer a wonder and, eventually, not even a threat. The old machinery of coercion that murdered Bruno and burned witches would finally run down, spending its depleted energies elsewhere after the new science made magic marginal in Europe's high culture. Another force that drove magic offstage was laughter – laughter in the theater, where sound and sight work together. New ways of seeing scientifically, assisted by new arts of picturing, turned magic into a sideshow, a mere illusion. Even when magic was still a serious matter, writers had found comedy in it, as long ago as Plautus and Chaucer. The fake magus is a character in Jacobean school plays that imitate Plautus and also in the *Commedia dell' Arte* that influenced Molière.[65]

The fourth performance of *Le malade imaginaire* in 1673 was Molière's last: he died after playing Argan, the hypochondriac of the play's title. Diafoirus, Argan's quack physician, makes his patient pay for empty talk. When Argan's servant girl hears yet another torrent of medical jargon from Diafoirus, her response is exasperated: "there you have it, the meaning of study – one learns to say lovely things.... How wonderful if the cures were as fine as his speech." Her blunt words from below stairs mean nothing to the learned medic. He replies with praise for himself as the ideal healer, who "won't budge from an opinion, ... binds himself blindly to the opinions of the ancients and has never wished to understand ... the

Figure 70. Argan Treated by Diafoirus, Seventeenth Century.
(Bibliothèque Nationale de France, Gallica Digital Library, ark:/12148/btv1b8438362h)

pretended discoveries of our century on the circulation of the blood and other notions of that ilk."[66]

The play's finale in macaronic Latin is a song and dance burlesque of the granting of a medical diploma. The faculty assemble to bestow the degree and wish themselves "health, honor, money and *bon appétit*," exchanging congratulations for having persuaded the world to treat them like gods. Since a deal so sweet isn't for everyone, the doctors will scrutinize all who seek their degree. The *primus doctor* asks the first question: why does opium bring on sleep? The candidate answers that opium's effect comes from its narcotic power:

And to your quiz
my answer is
a virtue dormitive,
whose nature is
to soften up the senses.

"Good answer – oh good, good, good!" is the verdict: the candidate has proved his erudition; his ordeal is over; his new colleagues rejoice with him.[67]

Physicians had discussed drugs and their qualities for centuries. Some – not as deluded as the new doctor of Molière's play – still found it baffling that hemlock kills and opium dulls the senses. And yet they also thought it useless just to embalm their ignorance in qualities called 'poisonous' or 'narcotic.' Writing after these worries had reached a crisis, Molière could count on opium's dormitive virtue to draw a laugh from a lay audience: the age of Athanasius Kircher was also the age of Gabriel Naudé. By the mid-1650s, just after Agrippa's magic manual appeared in English, Descartes and Galileo were famous and dead, Boyle had begun the *Sceptical Chymist*, Locke was an undergraduate at Oxford, and Molière was managing a troupe of actors, joking with empty jargon in plays that exploit this line of humor. Swindling medics peddling vacuous theories are a sure hit: people always find such things funny. But Molière's old weapon struck deeper in post-Cartesian Europe, where his targets were exposed as never before: to explain without explaining was a scandal, then a farce.[68]

A symptom of the stress that made Molière's audience laugh was the publication in 1656 of Jean Fernel's book *On Hidden Causes*– its last separate edition in the seventeenth century but the twenty-ninth since 1548. *De abditis rerum causis* had been an illustrious Renaissance book, though its fortunes fell by Molière's time: it was a casualty of the new science. Fernel's ideas about matter and medicine were superseded by the physics of Galileo and Descartes – the starting point for Boyle and Locke. But Fernel too was a starting point.[69]

Fernel is a minor hero of the history of science. He first used the term 'physiology' in something like its modern sense; his astronomical, anatomical, and pathological insights have also impressed the historians. His success in his own day was brilliant, and a posthumous summary of his medical system held its readership even longer than *De abditis*. But Fernel was born in the late fifteenth century and was educated when Paris was the citadel of late scholasticism. He treated Diane de Poitiers, mistress of the Dauphin who became Henry II, after Henry's father, Francis I, died of syphilis despite Fernel's best efforts. He also applied the new philology to medicine. His modern reputation was shaped by a biography written by a Nobel laureate. "His ranking in the history of medicine," according to a writer in the same tradition, "rests mainly upon his role as a reformer fighting to replace magic, sorcery and astrology with observations at the sickbed."[70]

It would be hard to say anything less true of Fernel's long-lived book *On Hidden Causes*, which exalts occult forces in medicine, making an expert case for a rationalized occult therapy on principles taken from the best classical authorities – Hippocrates, Plato, Aristotle, Galen, and many others. To construct a method for occult medicine, Fernel repudiated medical empiricism and advocated rationalism. He was no patient student of pathological particulars, accumulating observations to wear down false claims for magical healing. He labored to improve an ancient theory of occult medicine, not to destroy it.

In the received account, medicine marches forward in an epic of scientific progress: from the beginning, so the story goes, physicians have struggled to free their art from magic and ground it in facts. One ancient scripture of medicine-trying-to-be-science is a Hippocratic text on epilepsy, called *The Sacred Disease* and remembered for three findings: first, the disease is not especially sacred since it behaves like any other illness; second, those who call it sacred are frauds and magic-mongers; and third, anyone who understands the four ordinary qualities can use them to heal the body and dispense with magic. The same work says that all diseases "are alike divine and all human": this was the remark that inspired Fernel to write his book, which he describes as an inquiry into divine causes.[71]

Fernel knew that medical confidence in elements and qualities became firm only with Galen, who wrote long after the *Sacred Disease* and explained all physiology, pathology, and therapy in a larger, post-Aristotelian framework. The universe in which a wet, cool, watery drug cures a dry, hot, fiery disease is the world in which the same four elements constitute and account for everything beneath the Moon. Fernel realized that Galen's extension of the Hippocratic project was incomplete, however, that Galen himself had to look – grudgingly – beyond the elements to explain common medical phenomena. The venereal disease that killed Francis I was one such unsolved puzzle. But Fernel thought he had a therapeutic principle that would do the job: occult forces will cure contrary occult diseases, just as manifest powers of the four elements cure contrary manifest diseases.[72]

Fernel is proud of his book. He dedicates it to the new king, Henry II, and introduces it in terms that would have pleased Bacon, up to a point. Comparing it to other recent discoveries – artillery, the printing press, voyages to the new world – he bills his work as surpassing ancient knowledge and refuting those who deny that progress is possible. For contemporaries, however, Fernel's most striking innovation may

have been philological. He knew more of the old texts in Greek than most physicians – a huge advance on the cruder medical classicism of Symphorien Champier, for example, who died not long before *De abditis* appeared. Figures like Champier and Fernel are normally seen as agents of a progressive Renaissance, though few would connect Champier with the Scientific Revolution. What about Fernel, the herald of physiology, the forerunner of Harvey? Should he figure in the annals of scientific progress?[73]

The first of his two books *On Hidden Causes* is about form, one of the form/matter duo that was basic to scholastic philosophy. Like other Aristotelians, Fernel makes imperceptible form the source of imperceptible occult qualities. Like other Galenists, he also identifies form with the whole substance of the natural object, as apart from features of the object regarded as distinct components of it. Unlike many of his predecessors, however, he uses Greek texts to make these points, claiming that form is the origin of all activity in nature. Form, which is the Hippocratic divine power, follows the route mapped by Agrippa: it descends from God through the heavens and then regulates all terrestrial things.[74]

In this way, divine form accounts for the two phenomena discussed in the second book of *De abditis*: first, diseases called 'occult' because their causes are not manifest qualities and their effects are not simple corruptions of matter; second, therapies called 'occult' because their efficacy against such diseases also eludes explanation by manifest qualities, whose paradigms for Fernel are the hot, dry, and light properties of fire. Our perception that fire has such features starts with our senses. What we really perceive, however, are not features of a fiery thing but their effects on us. "Because you have *sensed* that fire burns, you *judge* it hot," says Fernel: "in the same way, because you have often *observed* that a magnet attracts iron, you should *conclude* from the result which you see that there must have been something antecedent."[75]

Our cognitive access to qualities of any kind, elementary or not, is indirect and by inference rather than directly by sensation. Except to infer that a burning sensation is caused by a feature of an object and then to call this feature 'hot,' there is nothing more to say about the external cause of the sensation. What about opium? Do we sense its dormitive virtue? No: on Fernel's theory, we infer that opium has such a virtue because the drug makes us feel drowsy. We perceive neither opium's dormitive virtue nor the hot quality of fire. "If I ask for the cause of fire's burning," explains Fernel,

> you can say no more than that it comes from intense heat and that this is its nature and property. Having given this confident answer, you will seem to have replied fully and learnedly. Yet when I say that the magnet attracts iron or that peony stops epilepsy by an innate property, according to you I have not expressed the cause clearly enough. Why so? Why make what is common to both cases special to one, as if it were privileged? Perhaps this is the difference: the property of fire, because it is more familiar, is defined by the special names 'heat' and 'lightness,' while no name has yet been applied to the properties of the magnet, peony and things of that kind.... Primary qualities do not explain everything, and ... we should be no more amazed by the characteristics of occult properties than by those of the elements.... Such properties arise not from the elements or from matter but from form alone.

The difference between manifest and occult qualities is merely nominal. Qualities traditionally called 'occult' differ from 'manifest' qualities only because we encounter the latter more often and give them common names like 'heat' instead of ungainly labels like 'dormitive virtue.' The distinction makes no real difference, arising only from habit, taxonomy, and method, not from physics or ontology. The physician in Fernel's account who appeals to manifest qualities "will seem to have replied fully and learnedly" – like Molière's new MD. But in the reality behind this appearance, no qualities are actually perceived, whether they are called 'occult' or 'manifest.'[76]

As long as the debate stayed fixed on qualities, the impasse explored by Fernel blocked further movement within the Aristotelian-Galenic framework. Galileo, Descartes, Boyle, Locke, and others would eliminate the obstacle by discarding that framework along with one of its key constructs, a theory of matter based on four elements (fire, air, water, earth) whose qualities (hot/cold, wet/dry) are haptic rather than visual. Such qualities can be felt but not seen. The sense affected by them is touch, not vision. The medium that transmits them is not just air but also the body's flesh.

Descartes would eventually look beyond the old elements and qualities to particles outside the range of vision, making pictures of nature's smallest parts. Wishing to see things clearly and distinctly by the light of nature, he finds that picturing invisible particles makes it easier to talk about them, to assert by analogy that some of their features are like those of visible objects constituted by them: a particle of light moves like a tennis ball. The explanatory simile, updating Horace for a science of matter, is knowing-as-picturing – *ut pictura res* – whereas Fernel had

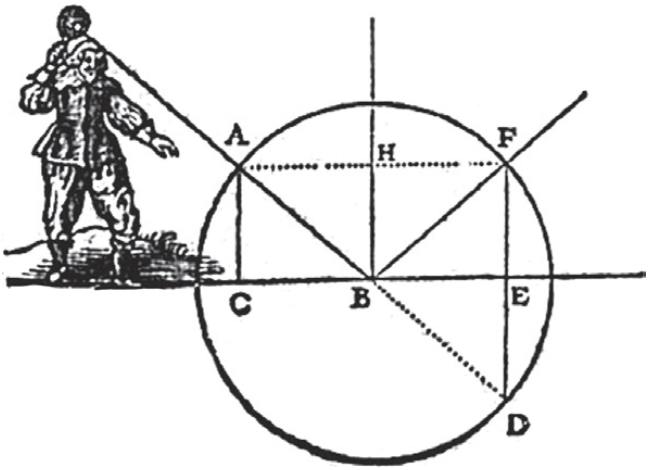
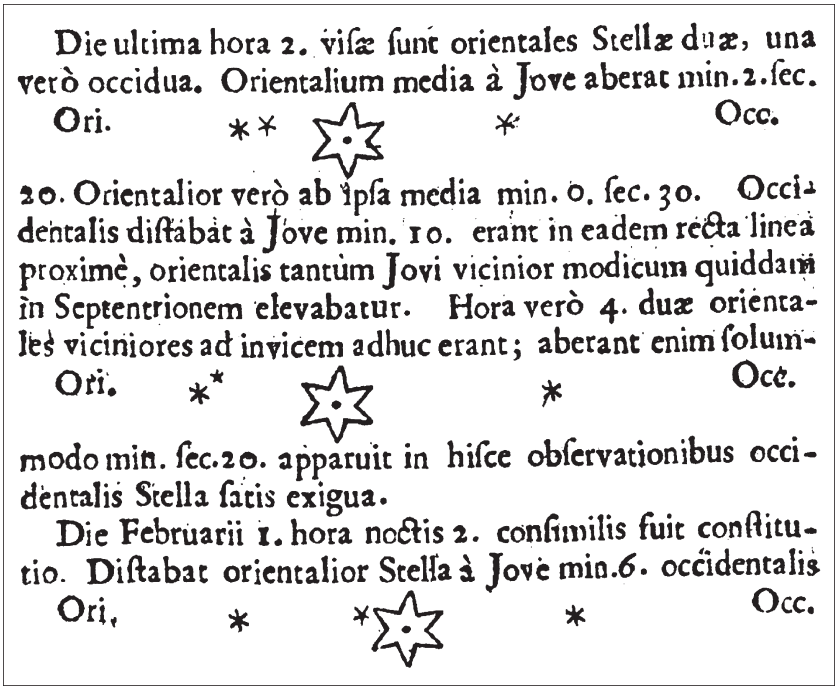


Figure 71. Optics on the Tennis Court.
(Descartes [1637], *La dioptrique*, p. 13)



Die ultima hora 2. viſæ ſunt orientales Stellæ duæ, una verò occidua. Orientalium media à Jove aberat min. 2. ſec.

Ori. Occ.

20. Orientalior verò ab ipſa media min. 0. ſec. 30. Occidentalis diſtabat à Jove min. 10. erant in eadem recta linea proximè, orientalis tantùm Jovi vicinior modicum quiddam in Septentrionem elevabatur. Hora verò 4. duæ orientales viciniores ad invicem adhuc erant; aberant enim ſolum-

Ori. Occ.

modo min. ſec. 20. apparuit in hiſce obſervationibus occidentalis Stella ſatis exigua.

Die Februarii 1. hora noctis 2. conſimilis fuit conſtitutio. Diſtabat orientalior Stella à Jove min. 6. occidentalis

Ori. Occ.

Figure 72. Moons Orbiting Jupiter Pictured by Galileo.
(Galileo [1653], p. 40)

stayed mainly with knowing-as-touching. Wishing to illuminate even the invisible parts of nature, Galileo also had good reason to abandon the tactile elements in order to explain by picturing, which the four elementary qualities could not do. Pictures, after all, had made the author of the *Starry Messenger* a celebrity. Associating the elements with the four non-visual senses, Galileo sets vision apart, linking it with light and ranking it highest.[77]

Long before, when haptic qualities became the basis of medical explanation, Greek physicians who found them unsatisfactory sometimes detected other qualities and called them *arrhêtos*– an adjective that is hard to translate but usually corresponds to *occultus* in Latin. Unlike its Latin analog, however, the Greek word has to do with saying rather than seeing; it is the negative of *rhêtos*, cognate with *rhêma*, 'something said.' The *arrhêtos* cannot be said or expressed: it is muted between description and bafflement, silenced at the margin of the sacred and profane.

Fernel feels this frustration, a professor's perplexity – professing the unprofessable. Yet he knows that *arrhêtos* is a key term in Galenic medicine. Other words, *adêlos* ('unclear') or *aphanês* ('invisible'), are less germane, given the dominance of haptic qualities. What is most at stake for Galen and Fernel is neither the unseen nor the untouchable but the unsaid, the therapeutic meanings left unspoken because they are unspeakable – *arrhêtos* – in traditional medicine. These meanings, whether they are classified as unseen (*occultus*) or undescribable (*arrhêtos*), were prominent in the physics of haptic qualities, where occult qualities enter to give an account of what is otherwise unaccountable. When new theories using pictures as explanations displaced the old physics, occult qualities would also be displaced.[78]

Explanatory picturing would eventually stimulate inference from the macroscopic to the microscopic, inspiring Descartes and the mechanical philosophers to cultivate their clockwork oranges and assemble automata from blueprints of a nature imagined in micro-images. Meanwhile, still committed to ancient medicine but determined to revitalize it with Hippocratic divine powers, Fernel has another option: using occult *faculties*, not occult *qualities*, to replace epistemic puzzles with clinical data.

The root of *facultas* in Latin, *fac-*, is also the root of *facere*, 'to make.' Plain facts of clinical experience are that opium *makes* people sleepy and hemlock *makes* them dead. By isolating faculties – fact-making agents – as efficient causes of clinical effects, Fernel can describe the medical uses of opium while evading the epistemic gap between the drug's (objective)

Figure 73. Stelluti's Bee, from His Translation of Persius. (Persius [1630], p. 52)

dormitive quality and the patient's (subjective) dormitized experience. The drug's faculty is just the efficient cause of the drowsiness observed in the patient. About such faculties Fernel can say no more, except to claim that they are products of divine form – just as Newton would confess his ignorance of the cause of gravity, except insofar as God is its cause. Leibniz would take Newton's admission as proof that his rival's version of gravity was an occult quality, by Leibniz's day long since demoted to a term of derision and abuse.[79]

In a crude way, Fernel anticipates the use that mechanical philosophers would make of the term 'power' to name one thing's capability to act on another – as a drug can heal a patient or a poison can kill her – and to distinguish that item from effects taking place in the affected thing. But many achievements of the mechanical philosophy made it more believable than Fernel's theory of faculties: one was the rejection of occult qualities; another was the ability to probe the invisible world with instruments; a third was the new practice of treating unseen structures as intelligible by pictorial analogy with visible things, both natural and artificial. Fernel died before those jobs were done, though physicians of his time already had cause to rethink the world in pictorial terms.[80]

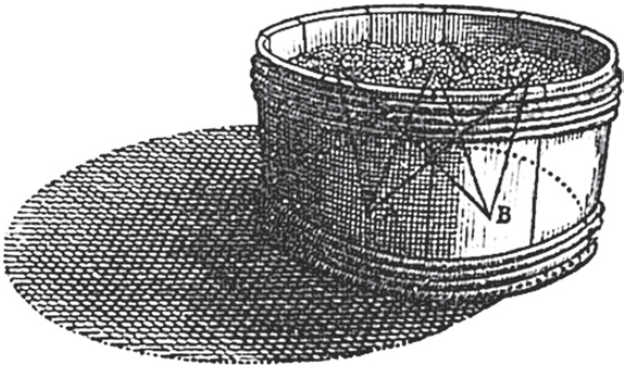


Figure 74. Physics in a Wine Vat.
(Descartes [1637], *La dioptrique*, p. 6)

Two forces were interacting to change the debate on matter and its properties: *words* reinforced by *pictures*. The recovery of ancient atomist texts that started in 1417 opened several lines of attack on Aristotle, at first without help from microscopy. In 1623, near the end of that slow process, Galileo described the new device in the *Assayer*. He also made the instrument used to prepare the first printed image of something often seen yet too small for the naked eye to see fully – a bee with its jointed legs in Francesco Stelluti's famous print. But there was still no microscopy good enough to support a theory of particulate matter. Although Descartes made designs for microscopes and had high hopes for them, his critique of hylemorphic qualities was independent of the new instrumentation. Yet his novel philosophy explained difficult points of theory – items as abstract as particulate motion in a plenum – by picturing them in commonplace images, like grapes dropping through a vat of wine.[81]

Faced with questions that Fernel had tried to answer, why did Descartes choose this way to reply – with pictures? Perhaps he remembered the pictureless words of Lucretius, the atomist poet who used verbal images of what must be imagined because it can't be seen. By comparing atoms in the void to motes in a sunbeam, Lucretius canonized the pictorial analogy that links invisible micro-objects to visible macro-objects in the mechanical philosophy. Descartes makes the Lucretian simile visible in the spherical particles that became ubiquitous in the matter-theory of the new science.[82]

Descartes grew up when innovators like Basso, Hill, and Sennert were confronting the scholastics with atomism, but he was also a contemporary of Jacques de Gheyn, Pieter Saenredam, and Willem Claez Heda, who

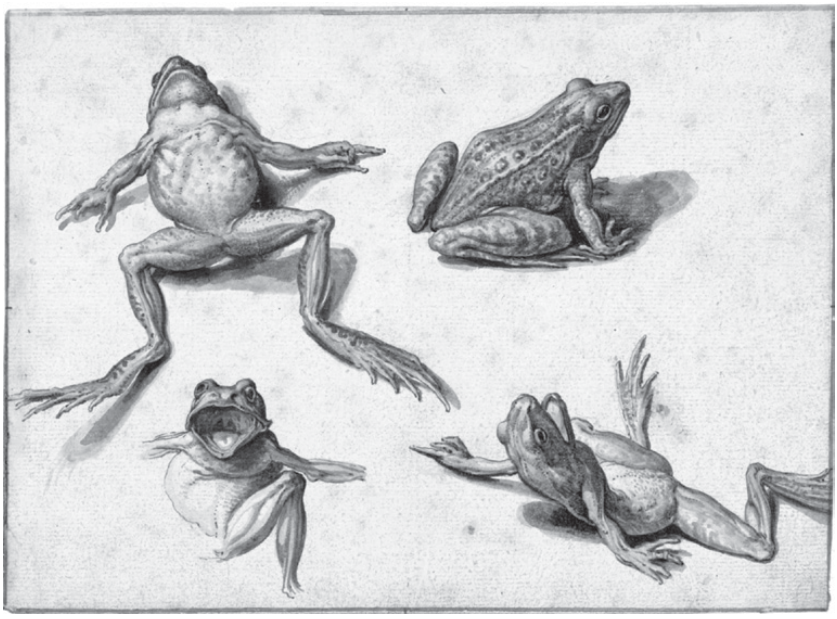


Figure 75. Jacques De Gheyn: Frogs, before 1625.
(Amsterdam, Rijksmuseum, RP-T-1898-A-4036)

were painters. Were his clear and distinct ideas illuminated by the northern art of this period, by its exacting depictions of objects in the light of nature? Beyond the circumstance of his friendship with Constantijn Huygens – who praised De Gheyn and wished the artist had lived to paint with a microscope – there is little evidence for this move from drawing pictures to drawing conclusions. We can only speculate about the roots of the philosopher's readiness to trust what can't be seen but can be pictured. We know, however, that a pictorial tradition as old as the revived Lucretian atomism was available to underwrite his confidence.[83]

One master of picturing, Martin Schongauer, had painted a striking watercolor of the peony – that ancient vessel of magic – around 1472. Unlike the stiff, schematic *pionia* of the *Herbarius* compiled by printers of the same period, Schongauer's flower lives on the page, surpassing later botanical images prized for precise naturalism. Around the same time, however, he also produced his *Temptation of St. Anthony*, where eight writhing dragon-demons bedevil the holy monk. Like Leonardo's dragons, Schongauer's demons have familiar parts – wings, legs, teeth, claws, scales, horns, hair, eyes, ears, noses – that make their bearers

Figure 76. Schongauer's Peony, Early 1470s.
(J. Paul Getty Museum, Drawings Collection, 92.GC.80)

believable by analogy with animals that everyone has seen, though not with Schongauer's eye: he has observed bats, birds, cats, deer, dogs, fish, goats, insects, lizards, snakes, and other beasts meticulously before disassembling, redeploying, and distorting their anatomies to create horror. His ugly demons and his pretty peony both signal a shift, from text to picture, in the course of natural history: work like his encouraged other artists to produce and – once printing became common – to disseminate representations of natural objects that direct the viewer to nature herself. From Schongauer through Dürer to Joris and Jacob Hoefnagel and the illustrated volumes of Aldrovandi, pictorial resources for a visual natural history accumulated.[84]

Pictures of artificial objects piled up in the same period, when Leonardo made his living as an engineer at court. Forts, mines, guns, ships, regal buildings, and whole theaters of machines multiplied in print, teaching conventions of illustration for analysis as well as imitation, showing parts beneath wholes, components under surfaces. While some artists used perspective, chiaroscuro, and color to make pictures truer to

Figure 77. Schongauer's Demons, Early 1470s.
(British Museum, PD 1895-9-15-261 [Lehrs 54; B 47], AN36793001)

nature, others simplified and schematized what they depicted, showing things disassembled, transparent, labeled, and thus more useful for science. Pictures or diagrams sometimes replaced words altogether.

These two ways of drawing – analytic and mimetic – converge in Leonardo's notebooks, where machines are anatomized and the body is engineered. In 1550, just two years after Fernel published *De abditis*, Georg Bauer (Agricola) completed his picture-book on mining and metallurgy,

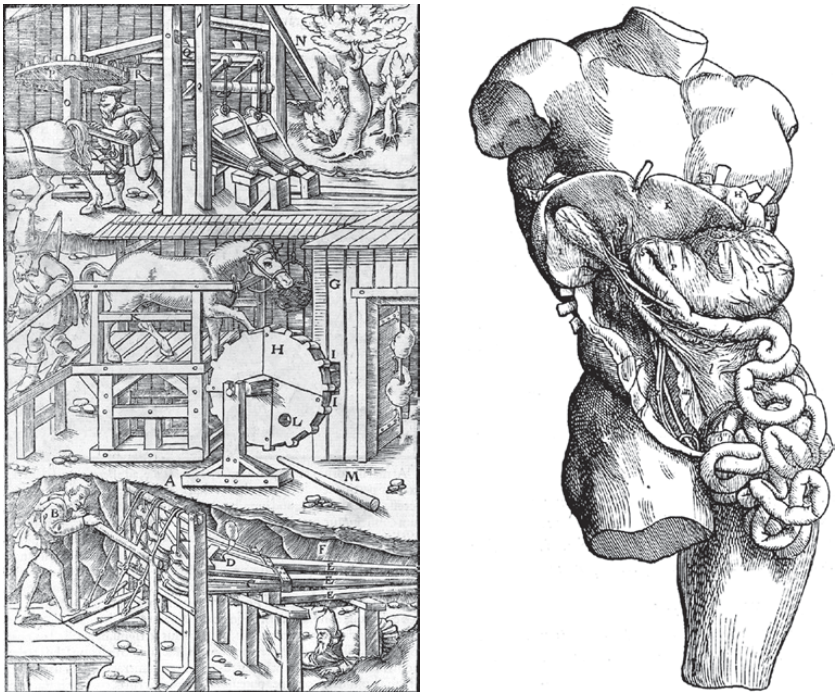


Figure 78. Looking Inside: Agricola and Vesalius.
(Agricola [1556], p. 169; Vesalius [1543], p. 465)

which displays "veins" of metal running through the earth and dissects large machinery on the page: all the latest apparatus is "put before your eyes and could not possibly be reported more clearly." In 1543, Andreas Vesalius had visualized the human body in the same way – by disassembling it. Once artists and scientists could take the body apart to see inside it, peering into this ark of the soul and temple of the Holy Spirit, why not look everywhere in nature, all the way down? Only because there were obstacles, practical and theoretical, at the boundary of invisibility. Yet when atomism and picturing crossed the threshhold of the unseen world, and viewers of the unviewable could see how the shown improves on the said, some noticed that occult qualities were nowhere in sight.[85]

Before magic fell out of view, however, many years had to pass. And while seeing came to be believing, some sights still covered a multitude of sins. Consider the case of Luca Landucci, an apothecary. In 1512, he recorded a monstrous birth – an armless hermaphrodite with wings, a horn on her head, an eye on his knee and an eagle's talon for a foot. Since Landucci was a Florentine, and the birth supposedly occurred across the

Figure 79. The Ravenna Monster.
(Lykosthenes [1581], p. 295)

mountains in Ravenna, what he actually saw was a picture. "I saw it painted," he exclaimed, "and anyone who wanted could see the painting in Florence." Broadsheets depicting the prodigy had been circulating for six years in Italy and Germany, pictorial proof of nature's horrors and God's impending wrath. Although these awkward images and the finely wrought demons of Schongauer's *Temptation* share an anatomy – wings, horns, claws – the Ravenna monsters look less convincing. And yet both sights – imps from hell and a freak of nature – give pictorial reasons for belief. Both are ancestors of Stelluti's magnified bees and of the particles depicted by Descartes. Both also authenticated the demon-ridden world of magic until other pictures made that world absurd to look at.[86]

When Fernel finished his book in 1548, two elements of mechanical thinking had been on view for some time, a pictorial representation of nature and a particulate theory of matter: both were at odds with the occult philosophy and with preternatural marvels portrayed in the apocalyptic age of Reformation. Later, by the time of Descartes, both would

be more potent and more plentiful, though still enmeshed in marvels, large and small, and not yet much enlarged by microscopy.

5 SOME RENAISSANCE MAGICIANS

Just before Ficino wrote *De vita 3*, Giovanni Pico put a bolder theory of magic on display in the *900 Conclusions* that he published in 1486 and in the *Oration* composed to introduce them. Kabbalah, the Jewish mysticism that Pico explored when few Christians had even heard of it, is the subject of 119 of his theses. He sees Kabbalah as the next-to-last stage of a curriculum and a discipline – philosophical and mystical – that rises from ethics and logic to extinction of the self and union in the One, discarding the body along the way. His magic is like Neoplatonic theurgy or god-making in that it transforms humans into bodiless angels. Although Pico uses the same distinction between natural and demonic forces that failed to shield Ficino, the aim of his project – contrary to Ficino's official position – is to exit this earthly life, not improve it. The theurgy required by his ascetic mysticism risked charges of demonolatry: a thesis on magic was one of the few that the Church condemned outright.[87]

Pomponazzi had the opposite problem. By ejecting demons from magic, he eliminates an occasion of sin, but the consequent naturalism makes worse trouble for a faith that venerates spiritual persons and appeals to miracles. Aristotle is still the Philosopher for Pomponazzi: Ficino's revival of Plato had not turned the Aristotelian university curriculum into a Platonic one. But as Renaissance readers learned more about all the ancient philosophical schools, they also emulated their quarrels. Philosophical contests of authority – Stoics contradicting Epicureans, both schools refuted by the Sceptics – extended to medicine, where the recovery of Hippocrates and Galen at first challenged the Muslim physicians, Avicenna and Averroes, and then exposed the Greek healers to closer scrutiny.[88]

Paracelsus, a military surgeon, physician, and magus who wrote mainly in a German dialect, burned Galen's books along with Avicenna's, though he was not without book learning himself – including Ficino's magic. From Ficino and Agrippa he absorbed a little Neoplatonism, but his deeper religious roots were in a native German mysticism. In the age of Luther, Paracelsus was not alone in expecting millenarian reform of knowledge and in trusting faith and experience more than authority. He was a rebel who had the courage to replace the conventional Aristotelian physics of four elements with the three different substances – mercury, salt, and sulfur – of medieval alchemy. To find the magic in natural objects,

however, he depended more on direct experience of their power than on any theorizing about them.[89]

Giambattista Della Porta, another innovator in magic, respected conventional philosophy more than Paracelsus did. "Magick is taken amongst all men for Wisdom and the perfect knowledge of natural things," he claimed, "and those are called Magicians whom ... the Greeks call philosophers." Like Agrippa's manual, his *Natural Magic* was published in English in the seventeenth century, exactly a hundred years after its first Latin version of 1558. Again like Agrippa's work, Porta's is a compendium of various kinds of magic. A more creative dimension of his project, anticipated by Agrippa, was to treat what we would call technology as practical magic. In Porta's old age, skill in optics made him Galileo's rival in designing a telescope, but his work with lenses and mirrors also recalls Agrippa's light-magic, against the background of Ficino's theorizing about magical illumination. John Dee, an English contemporary of Porta's who saw visions in a crystal ball and talked with angels through a medium, also speculated about magical technologies while doing creative work in mathematics.[90]

With Gerolamo Fracastoro and Girolamo Cardano, Porta was an early voice among the Italian natural philosophers who looked for alternatives to Aristotle in nature herself. *On the Nature of Things According to Their Own Principles* (1563) is a book by one of those free spirits, Bernardino Telesio: the title could be a maxim for the whole group since they all saw magic as a force of nature. Telesio formulated a naturalist empiricism, explicitly rejecting ancient and medieval rationalist systems. His independent stand inspired Giordano Bruno and Tommaso Campanella, the two dissident Dominicans who were the last great Renaissance magicians.[91]

Campanella came closer than Bruno to being an effective revolutionary. He also lived longer – though mainly in jail. Best remembered for the utopian (and astrological) politics of the *City of the Sun*, his messianic fantasies incited real plots and angered the authorities. Although he suffered terribly in prison, he also had time to write, and he wrote abundantly, producing works that circulated more as political circumstances changed and made him less dangerous. By the 1620s, he was tame enough to advise a pope about astrology. He had started by interpreting Telesio and advocating the primacy of sensation against arid Aristotelian abstraction. He assimilated this sensism into his own complex metaphysics, the last grand system of its kind to come out of the Renaissance. Not even Bruno produced philosophy on the scale of Campanella's *Metaphysics*, though Francesco Patrizi had similar hopes for his massive but mystifying *New Philosophy of the Universes* (1591). Although Patrizi, like the other Italian nature-philosophers, made

use of Ficino's philosophical magic, he gets credit today for developing a scientific concept of space that eventually led to Isaac Newton's cosmology. Campanella's *Metaphysics* gets no such respect. After Descartes declared his books not worth reading, few philosophers in the Western canon (Leibniz was an exception) bothered to try.

Circulating an *Apology for Galileo* after 1622 but never doubting the reality of magic, Campanella distrusts the usual appeal to occult qualities in the Aristotelian style. He substitutes his own metaphysics, building on the Neoplatonism revived by Ficino and on the empiricism of Telesio and his contemporaries. Like Ficino, he concludes that the world and all its parts are alive, and his main work on magic, *On the Sense in Things and on Magic* (1620), emphasizes the capacity of all things to sense one another. This pansensism, adapted later by Leibniz for different purposes, explains how natural objects communicate their powers magically. And Campanella's metaphysics traces the powers lodged in sentient objects beneath the Moon up through various levels of being to God, their ultimate source. Magical pansensism is the basis of Campanella's astrology, and astrological predictions stand behind his prophetic politics – including the horoscope of the Dauphin, the newborn Sun King, that he prepared in 1638. Richelieu himself asked Campanella for the horoscope, but if the star of the old magus was rising at court, Descartes and other scientific revolutionaries took little notice.[92]

By the time Campanella died in 1639, the innovators found his philosophy even more backward than the unruly politics that kept him in prison for nearly three decades – but alive, outliving Bruno by nearly forty years. That other insurgent Dominican, who died as the new century started, will always be remembered as the first to locate our sun-centered system of planets in an infinite space of infinitely many worlds. He had the mind and will to extract this audacious innovation from the technical astronomy of Copernicus when it was not yet well known, much less accepted. He also had enough imagination – or not enough good judgment – to shore up his new science with ancient magic. At the time, there was nothing odd about pairing magic with science. Until philology debunked the Hermetic scriptures some years after Bruno was burned, their putative author, Trismegistus, was as real as Moses for educated Europeans. Hermetic authority in astrology and alchemy was as credible as Aristotle's standing in metaphysics.[93]

Bruno had no qualms about contradicting Aristotle or Plato or himself. Sometimes his anti-Aristotelianism is atomist, sometimes monist and pantheist. Above the inconsistency of his physics and metaphysics he

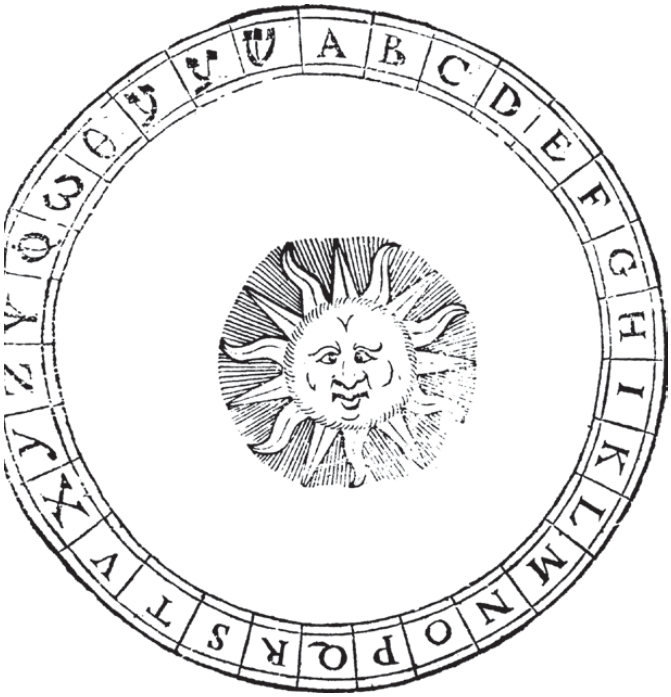


Figure 80. Bruno, *De umbris idearum*: An "Image of Ideal Meanings."
(Bruno [1582], sig. ûiir)

Figure 81. Aries.
(Bonatti [1550], p. 22)

seeks a higher epistemic and moral unity, invoking paradoxes of 'learned ignorance' and 'coincidence of opposites' explored by Nicholas of Cusa. Bruno's passion for epistemic unity took him back even further – into the Middle Ages and the mystical mnemonics of Ramon Lull.

Born with astonishing powers of memory and mind, Bruno digested and then extended the Renaissance literature that saw memory as both a part of rhetoric and a tool of magic. As a professional memory-artist, he used bizarre images as aids to memory, coming to understand how imagination can access a great deal of information through a single striking picture. If such images were astrological, and if there were magic in celestial figures – as Ficino taught – perhaps our faculties of imagining and remembering could open channels of heavenly power. And the information that flows through figures and images might be processed through the symbolic machinery that Bruno found in the Lullian art of memory.[94]

But Bruno had different plans when he announced the Lullian phase of his work in the *Shadows of Ideas* (1582), written a few years before he had fully formulated his stunning position on an infinite universe. The shadows of ideas are symbols of ideas, purely arbitrary signs to which any meaning you like can be assigned – unlike icons that have natural referents. In the illustration that Bruno calls "an image of ideal meanings," the Sun is such an icon: despite its artificiality, we easily identify the natural object that the icon represents, even though that object has no such solar face. Likewise, because a user of the Roman alphabet knows her *ABCs*, she knows what sounds the letters *a, b*, and *c* stand for, though maybe not what sounds are signified by ע, צ, and ש. Assignments of sounds are purely conventional in any alphabet, based on no resemblance at all to their referents – unlike Bruno's Sun.[95] On the spectrum between natural and conventional signifying, the ram that we recognize in the constellation Aries is closer to nature – and to Bruno's cross-eyed Sun – than Hebrew or Roman letters. The resemblance of the Ram that prances across the sky to a ram carved on a talisman starts with nature and is not a purely arbitrary relation: the corollary is that the sign called 'Aries,' if it had no place in nature, could have no role in natural magic.

Toward the end of the *Shadows of Ideas*, Bruno displays a picture of a ram and explains that "in the first face of Aries rises a black man of enormous stature with burning eyes and a harsh expression, standing and wearing a white cloak." Since Aries is a natural sign used for astral magic, perhaps the same is true for this first sector of Aries and the tall, angry man with glowing eyes. Bruno knew Agrippa's descriptions of such images and also found pictures of their zodiacal locations in an illustrated

digest of Albumasar's astrology. He describes thirty-six of them, three for each of twelve constellations: they are the decans, descended from ancient Egyptian star-gods and – in their most resplendent theophany – painted on the walls of a palace in Ferrara shortly before Agrippa was born.[96]

After showing twelve images for the zodiacal constellations, each housing its three decans, Bruno also provides pictures for the seven planets and then describes "twenty-eight images of mansions of the Moon":

SE first, an Ethiopian on an iron chair throwing a spear and belted with a rope;
SI second, a king on a throne using his scepter to lift up a man lying face down on the ground;
SO third, a woman well dressed, sitting on a chair with her right hand raised above her head and her left hand rolling up the hair of a foolish woman who runs away;
SU fourth, a soldier seated on a horse holding a snake in his right hand and pulling a black dog with his left;
TA fifth, a prince on a silver throne, holding a rod in his right hand, embracing a girl with his left;
TE sixth, two men armed and bare-headed, throwing their swords away and embracing;
TI seventh, a man kneeling and raising both hands to the sky, well dressed on a seat of silver.

Although no pictures decorate this list of lunar sights, they are obviously meant to be visualized. Just like the decans, they are images – bizarre images – and their strangeness makes them memorable: just what one needs for an art of memory.[97] Bruno's mnemonics, seen in an astrological setting near the end of his book, might seem to be a new kind of astral magic, whose talismans are his memory images – 750 of them in the *Shadows of Ideas*, which organizes the images with a special alphabet arranged on five concentric 'wheels.' Bruno augments the Roman alphabet with a few Greek and Hebrew letters to make a total of thirty for each wheel: when each letter combines with each of the five Latin vowels – *a e i o u* – the total number of alphabetic pairs for each wheel becomes 150, making 750 for all five wheels. When one of the five wheels turns, the relation of its letters to those on the other five wheels changes: this is the combinatorial machinery of Bruno's mnemonics, which could underwrite an astral magic if the 750 images were natural celestial icons.[98]

After listing his images, Bruno says what their purpose is: "they work to describe, one by one, the segments of the divided item whose contents

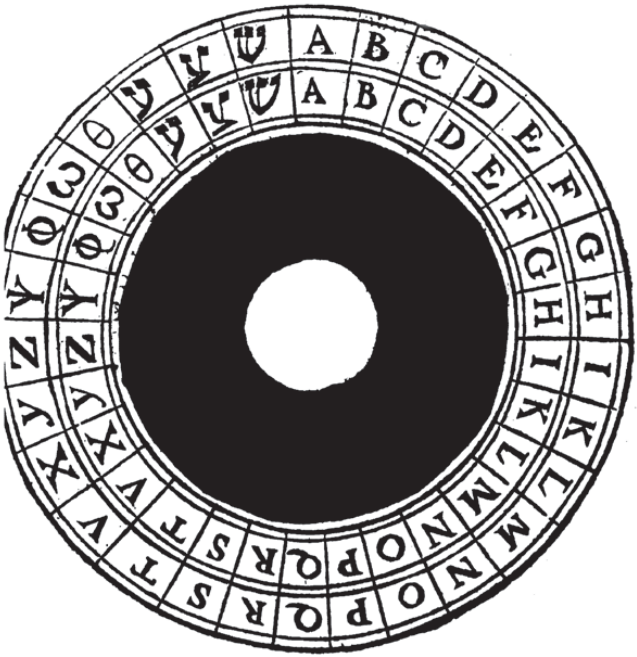


Figure 82. Two of Bruno's Wheels.
(Bruno [1582], p. 36)

need to be remembered." The first seven images of the lunar mansions – in the example given previously – are keyed with the consonants *s* and *t*, in alphabetical order, which are then combined with the five vowels, also in alphabetical order, to make seven syllables: *se si so su ta te ti*. Each syllable is one of "the segments of the divided item whose contents need to be remembered," and that item is a word segmented into syllables – most usefully a word of a foreign language unknown to the memory artist or his customer. Recalling the image of "an Ethiopian on an iron chair throwing a spear and belted with a rope" also recalls the syllable *se*. The place of that image/syllable pair is on the fifth and innermost of the five alphabetical wheels. A schema of the word to be remembered will be *abcd-se*, where *a, b, c,* and *d* are the four previous syllables – if the word has five syllables, designated in the same way by letters on the four surrounding wheels.[99]

The same goes for the first decan image, "a black man of enormous stature with burning eyes and a harsh expression, standing and wearing a white cloak." Each of Bruno's 750 images has the same structure,

whose five parts he calls *agents, actions, tokens, adjacents,* and *attendants*. "Construct five fixed wheels," he writes, thinking of the wheels in their initial positions, before turning any of them: "each has one hundred and fifty combinations of two letters. The first of these, on the outside, signifies *agents* named for inventors, the second signifies *actions*, the third *tokens*, the fourth things *adjacent* and the fifth things *attending*." Applying this pattern to the first lunar mansion produces this result:

syllable	*agent*	*action*	*token*	*adjacent*	*attendant*
SE	Ethiopian	throwing	seated	belted	spear

The image is entirely arbitrary: a seated Ethiopian wears a belt and throws a spear; nothing familiar from astrology, mythology, emblematics, or any other tradition comes to mind. Although an Ethiopian is the agent linked with *se* for the lunar mansions on the fifth wheel, Crithon – the proper name of an inventor – is the agent for *se* elsewhere in the system, on the first wheel, populated by inventors. Before any of the wheels turns, *se* on the first wheel aligns with *se* on all the others, producing this *fixed* image for Crithon:

syllable	*agent*	*action*	*token*	*adjacent*	*attendant*
SE	Crithon	making wax	wickedly	near a dog	an Ethiopian, etc.,

where the attendant is the seated Ethiopian as depicted for the first lunar mansion, while Crithon makes wax wickedly near a dog. The 'word' picked out by this weird image, *se-se-se-se-se*, may not be worth remembering, but turning the wheels produces many more choices, like *se-pa-ra-bi-le*, whose image is

SE	Crithon	doing magic	hopelessly	with a poppy	an armed man, etc.,

where the attendant is a planetary image from the fifth, innermost wheel, the second such image for Mars: "a man armed with a rather broad sword and a lance, on whose helmet stands a sort of chimera spitting flaming sparks from its mouth." The main sequence from *agent* through *action, token* and *adjacent* to *attendant* runs from the circumference of the outermost wheel toward its center through the other wheels nested inside, in order to assemble words of five (or fewer) syllables. The astrological images on the fifth wheel are read in the same way, like the first decan of Aries:

AA	man	standing	tall	glowering	robed

Although Aries is a natural sign – a group of stars resembling a ram schematically – the Aries decan image for the syllable *aa*, like the *se* images,

resembles nothing at all in nature. Accordingly, this concocted image operates in an art of memory that is not an art of magic – at least not a natural astral magic like Ficino's. The astrological information that Bruno records on the fifth wheel is not merely ornamental, however: its purpose is to stabilize and organize his mnemonics by grounding an exuberantly abstract art in something concrete and familiar. Five turning memory wheels with places for 150 images on each wheel will generate billions of five-syllable words: what better way to navigate that finite but vast semiotic space?[100]

Explaining how to use his memory images, Bruno directs the user to "forms inhering eternally in eternal substrates." Eternal forms of that kind are the zodiacal shapes that shine forever in the heavens: since they are changeless, they are stable as well as unforgettable. The memory artist has a choice: either manipulate the "substrates" to organize the forms or "let the substrates get their order from the forms, which actually helps keep those very forms in memory." The substrates are immense arrays of syllables, mapped from arrays of images, produced by turning the five memory wheels. By using the natural order of the twelve zodiacal signs, the thirty-six decans, and the seven planets as patterns for parts of those arrays, the artist can make nature herself more memorable while also deploying the artifice of the wheels.[101]

In that sense, the fifth wheel is astrological. If *aa* is the last syllable of a five-syllable word that needs to be recalled, its schema will be *abcd-aa*: the memory artist can ground the task of remembering in the word's final syllable, thus attaching *aa*, an abstract pair of letters, to a concrete environment – astrology – which is well known and well structured. (The names of inventors on the first wheel have a similar purpose: Bruno's readers would recognize many of them from Polydore Vergil's widely read book on inventors.) In this way, conventional astrology becomes an appliance for an art of memory – an art that is not astral magic. The purposes of the art are two: mnemonic and heuristic. The Lullian combinatorics that builds strange words out of syllables in order to make them memorable also locates those words – and their referents – in a shifting framework where they are adjacent in one state, remote in another, just as the wheels constantly move syllables in and out of words, while adding and subtracting elements of the associated images. The memory artist's experience is heuristic, a new way of discovering and inventing to complement Bruno's novel art of remembering.[102]

Bruno's shadows of ideas are symbols meant to mediate the ideas that the art will discover, and those symbols are arbitrary signs. His reliance on

Ramon Lull's art is obvious, but this takes nothing away from the achievement. Astrology as Bruno found it was heavy with meaning and fixed by tradition: in that situation, his decision to subordinate the semantics of the decans to a novel semiotic system is remarkable. In this case, however, the renegade friar was not making trouble on behalf of magic, though magic was motive enough for him to innovate in metaphysics. Since the prevailing metaphysical systems, both Aristotelian and Platonic, had been built to match a finite, earth-centered, hierarchical cosmos, the loss of a center and the dissolution of its environment in boundlessness called for a new system, which Bruno supplied in various versions that oscillate between atomism and plenist monism. These new plans make a place for magic – a new kind of magic.[103]

Eternal, infinite potency is the core of Bruno's metaphysics, and the potency goes two ways, reflecting an old Aristotelian ambiguity: one side of potency is power, which is active; the other side is capacity, which is passive. Active potency, infinite and eternal, is the world-soul; passive potency, also infinite and eternal, is matter. These opposites, which are opposite and distinct only for our weak minds, coincide in the unity that is the universe – everything there is. Coincidence is really achieved only in God –*sub specie eternitatis*, as Spinoza would say – but that divine coincidence is the real essence of everything, whose transitory, visible face is the universe of matter changing in time: in that case, "matter is something divine, just as form is thought to be something divine, ... and the claim made by those who have dared even to call matter 'God' is not a foolish one."[104]

This statement is a measure of Bruno's audacity. Having eliminated the hierarchies of Plato and Aristotle, he found other ways to do the metaphysical work of their obsolete systems. The traditional model of local souls animating local bodies gives him a start on a quite different conception, where the small local ensoulments dear to you and me – because they are you and me – are just that, local and epiphenomenal, in an infinite, animate world whose matter is always and everywhere suffused with soul and intelligent divinity: indeed, matter is distinct from soul and divinity only notionally. A mindful world-soul acting from within matter to inform and enliven it, both locally and globally, replaces Aristotle's four causes; soul animating and informing matter supplies the efficient and formal causes; matter is the global material cause; and soul's divine intelligence, seen by us as providence or fate, secures final causality for the cosmos.[105]

Just as Bruno salvages the functions of Aristotle's four causes while dispensing with the traditional doctrine, he will also look after other

casualties of his innovations. Using his new metaphysics to explain magic, for example, he focuses on the 'bonds' (*vincula*) that bind the cosmos together. "Those who have not made careful distinctions," he explains, include "Platonists who think that what binds is the form of a thing traveling from the thing to the soul yet not leaving the thing that is its substrate." Bruno is unhappy with the ordinary scholastic picture of cognition, which is 'Platonic' only inasmuch as forms are involved. Such a form, he writes, "exists in the body"– meaning the cognized object. Likewise, "a bond sits securely in a body but, like a soul, has no separate part of the body." Most of this is conventional, until Bruno adds that in bonding – seen as a subject/object transaction –"the whole account of the bond is not to be seen in the subject but also lies … in what is bound": mutuality, often at a distance, is basic in transactions between bound things and what binds them.[106]

Substantively, the problem addressed is action at a distance: how can one thing affect another magically without touching it? A psychological form of the puzzle is more familiar: how does the red of an apple get into my mind when I see it and think about it? Bruno answers those questions in *A General Theory of Bonds*, an outline of the metaphysical principles that he applies in works on magic written around the same time, between 1588 and 1590. Procedurally, his task in the case of magic is to replace an older theory, based on hylemorphic physics and metaphysics, that no longer fits his infinite universe. The superseded doctrine – occult qualities as products of substantial or specific forms – no longer saves the phenomena that Bruno still needs to explain: the magnet, the electric ray, the basilisk, and so on.[107]

But the theory of occult qualities has less scope than other normative doctrines that Bruno discards. His discomfort with ordinary, accidental forms as vehicles of cognition is just one instance of his dislike for Platonic immaterialism. "Some Platonists" – including Ficino, perhaps, whose Platonism is eclectic and often relies on Aristotelian and Stoic ideas – "some Platonists have thought too crudely about the nature of thought and reason, which fills all things with the spirit of the universe." This intelligent spirit is Bruno's version of the Stoic *pneuma*. Since the ensouled cosmos breathes the spirit everywhere, its living intelligence reaches where Platonic "thought and reason" cannot go, making spirit a medium for magic across great distances. Universal spirit binds the cosmos together and sustains its sentience everywhere: "nature has given each thing a desire to preserve itself, thus implanting in each one a kind of internal spirit or sense, … which is located in all things and is life." The

universal spirit, when localized, makes natural objects alive, sentient and ready for a magus to command.[108]

Localized intelligent spirit is also personalized in the "spirits or demons" who surround the magus everywhere. They can "penetrate bodies and introduce thoughts," and "there are many more types of them than of perceptible things," yet they "experience pleasure, anger, jealousy and other emotions, proving that they have bodies … and are very much like us." People possessed by demons are deceived by them *in their reason*, by way of imagination, which is why they hallucinate things and events and conclude that the phantoms exist extramentally. But the possessed are not deceived *in their senses*: "they really hear what they hear and see what they see," the sights and sounds introduced by a demon. Bruno's account of demonic illusion is just what Pomponazzi had mocked: invoking external personal agency in a naturalist theory of sensation where such agency is otiose.[109]

But the framework of Bruno's pantheist naturalism, unlike Pomponazzi's natural philosophy, is not at all the standard scholastic dogma: "bodily substance differs from the substance of that Mind, Soul and Spirit on high," he explains, "because the universal body is also wholly in the whole universe while that substance is wholly in each part, making a kind of whole everywhere and delivering an image of the whole." Break a mirror into a thousand pieces: the image reflected once in the unbroken mirror will be seen a thousand times in the fragments. The presence and effect of soul, spirit, spirits and demons *locally* is like that: matter is the *global* medium, its agency is natural, but the matter is ensouled, alive, sentient, personal, intelligent and divine.[110]

Bruno, like the original Neoplatonists, finds Stoic vitalism, pantheism and pan-mentalism helpful: the Stoic doctrines make his Platonism eclectic and enrich its naturalism. The residual Aristotelianism of this aggressive critic of Aristotle is even more diluted and eclectic. Scholastic hylemorphism, despite its key role in theories of magic, is too static and abstract for Bruno. Hence, when he echoes Agrippa by naming three types of magic, "divine, physical and mathematical," and locating them in "three worlds, … the archetypal, physical and rational," we can expect him to change the rules of the game after dealing the same old cards.[111]

And change them he does: after the usual description of magnetic action as imperceptible, he concludes that "we can trace the reason for this … only to an outflow of atoms," and then he extends the atomist explanation to the other usual suspects: the evil eye, rhubarb purging choleric humors, flame kindling tinder from above, "numbness caused

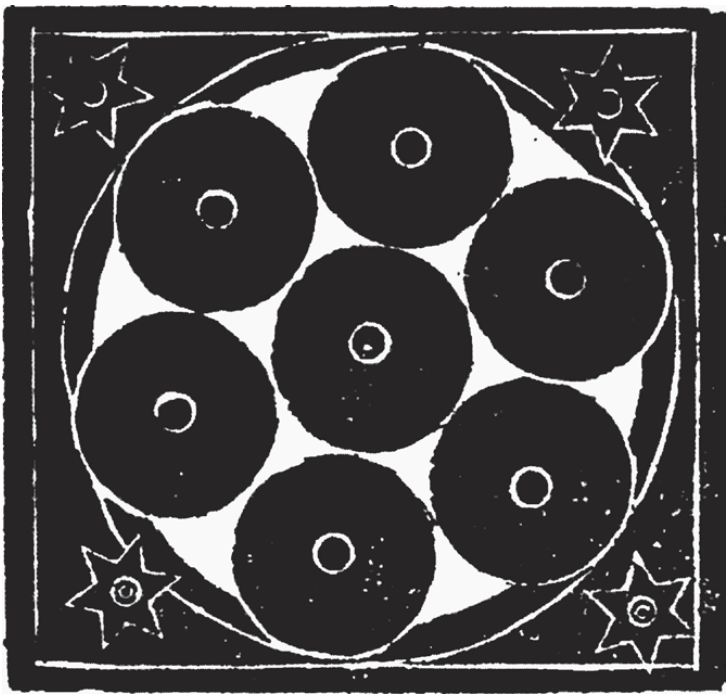


Figure 83. Atoms Pictured by Bruno.
(Bruno [1591], p. 50)

by a torpedo in a fisherman's hand without affecting the net," lightning melting a sword inside an undamaged scabbard and "the basilisk which, by looking at a man a long way off, kills him with the force of its gaze." In the end, for all these effects "the reason is finally hidden – in the atoms." The causation is 'occult,' but the framework is no longer a hylemorphic metaphysics.[112]

The new framework is naturalist, and one of its components is an atomist theory of matter: in fact, Bruno has been credited with publishing the first printed images of atoms in 1591, though the atomism presented in his book *On the Triple Minimum* is not a mechanical, inorganic materialism. The magical effects in question "do not come from a purely material principle, as certain vulgarizing physicians think." Bruno objects that "both a material principle and one that is formal or efficient" are needed – meaning universal matter energized by a world-soul that acts both through a global spirit and also through local spirits that are sometimes persons. Levinus Lemnius, who had published a book *On Nature's*

Hidden Wonders like Fernel's, is Bruno's target here, where his topic is spirit and imagination. This "thick-headed medical man," by reducing spirits to merely material humors, might just as well treat the soul itself as "a humor or excrement."[113]

Had Fernel been his target, Bruno might have been kinder since the imperceptible form that this other physician uses to explain occult qualities and diseases is ultimately divine. But the answer proposed by Lemnius is no answer at all, Bruno insists, so we must "turn our attention to the manifold bond among spirits. This is where the whole doctrine of magic is to be found." That doctrine is no longer to be had from the system that Agrippa based on Ficino's theory of magic, where "God flows into gods, gods into celestial bodies or stars, … stars into demons who tend and inhabit the stars, … going down the ladder" to ordinary natural objects on earth.[114] Replacing that hierarchical descent is a new metaphysics of mutuality whose different agents are "God, demon, soul, the ensouled, nature, chance and fortune, and finally fate," all of them bonds working through

> the divine force in all things, Love himself, the Father, source and Amphitrite of bonds, … the great demon: yes, the whole substance, constitution and … hypostasis of things is a kind of bond. We get to know this first and greatest teaching about the bond when we turn our eyes to the order of the universe. In this bond, higher things provide for lower ones, lower things turn toward higher ones, and equal things ally with one another.

Immersed in the primal ocean (Amphitrite) of bonds that is God's maternal love, all things are always already bonded. That theorem comes from Bruno's *General Theory of Bonding*, which lays out the principles of the new metaphysics that grounds "the whole doctrine of magic." His treatise *On Magic* develops applications of the general theory. "The first bond that ties spirits together," for example,

> is general and metaphorical, representing the three-headed Cerberus.… This is the threefold power needed in a binder or magus – physical, mathematical and metaphysical. In the first is the base, in the second the steps, in the third the top of the ladder. The first gives an account of active and passive principles by kind, the second of times, places and numbers, the third of universal principles and causes.

The cosmological triplets that Bruno found in Agrippa have been transformed by his original account of love and bonding. The second magical bond is also triple,

Figure 84. Puck or Robin Goodfellow.
(Anon. [1663–74])

> needed in the doer, in what is done and in what the doing attends, and it consists of faith or belief, also of invoking, also love and the intense emotion that goes along with applying actives to passives, for the soul as effective cause has the power to transform bodies or the composite, while the body as material cause has the power to transform the soul.

A third bond relies on principles distributed through the quadrants of the universe, a fourth is "the soul of the world or spirit of the universe that links and unites everything with everything," a fifth includes the "souls of the stars," a sixth "souls or demons," and a seventh "souls of humans who have turned into gods." Bruno's account proceeds through thirteen more magical bonds but less systematically, degenerating into a bare list. His *General Theory of Bonds* gives a fuller generalized description.[115]

That nature is a heraclitean fire, fueled by Love and Strife, is the essence of Bruno's theory, devised by a philosophical poet who took no

comfort from the Christian resurrection. "The most potent of all bonds belongs to Venus as the genus of love," he writes, "to whose uniformity and unity the bond of hate corresponds primarily and most potently." Appropriating another traditional principle of magic – sympathy and antipathy – for his new system, Bruno also underlines its organic character by treating the force of bonding as emotional, sexual and interpersonal. Bonds of magic grow from life and sentience into feeling and intelligence, making it not so strange to think of the magnet, which trades atoms with iron to form their bond, as *knowing* what to bond with – metal but not flesh or bone. "All things that are bound are in some way sentient, and – in the substance of that sensing – one can see a certain type of knowing and desiring, no differently than a magnet attracts and repels in keeping with its kind."[116]

⋆ ⋆ ⋆ ⋆ ⋆ ⋆ ⋆

"Pluck my magic garment from me," Prospero commands, in words written when most magicians were not quite ready to hang up their wizard's robes. In 1611, not all coherence was gone – just yet. The oracles of Hermes Trismegistus had not been exposed as mistakes in chronology. The scandal of Bruno's execution was still fresh. Campanella was still alive and thinking thoughts like Bruno's. But the renaissance of learned magic that began with Ficino and Pico was nearing its end. And much of Bruno's best writing about magic had not been published: his *General Theory of Bonds* came to light only in the eighteenth century, and he left the companion pieces on magic unfinished.[117]

Had Bruno been as durable as Campanella, had he lived to see all his Latin works in print, what difference would his survival have made for the survival of magic – as an issue for intellectuals in good standing? Considering the circumstances, especially the fatal damage done to scholastic philosophy by Galileo and Descartes, and considering the role of that philosophy in making magic presentable to intellectuals, it seems likely that Bruno's magic, like Campanella's, would have looked like a detour or a hangover or a blunder to people who would soon see their world in ways approved by Descartes and Galileo.

Given such circumstances, consider another perplexing fact: that Bruno's hostility to the prevailing philosophy – so powerfully expressed in the published Italian dialogues – helped destroy an old world that was better suited to him than the new one, a world that came to dislike both his theories and also the puckish tricks played by Shakespeare's

"merry wanderer of the night." About ten years before his earliest plays were performed, Reginald Scot – a sceptic about witchcraft – remarked that "heretofore Robin Goodfellow and Hob Gobblin were as terrible and … credible to the people as hags and witches be now," while foreseeing a time when "a witch will be as much derided and contemned, and as plainlie perceived, as the illusion and knaverie of Robin Goodfellow." Cold comfort for Bruno – and the witches killed in England and her colonies while Hobbes, Locke, and Newton lived.[118]

CHAPTER THIRTEEN

THE POWER OF MAGIC AND THE POVERTY OF ERUDITION

Worldly-Wiseman: How camest thou by thy burden at first?
Christian: By reading this Book in my hand.[1]

1 MAGIC AND MEMORY IN THE UNIVERSAL LIBRARY

Before and after the Revolution, Pietro Pomponazzi was a hero for French free-thinkers and atheists. Writing on *Averroes and Averroism* in 1852, Renan called his ideas "the living thought of his century," expressed in a "materialism of great simplicity: that the immortality of the soul was invented … to keep the people in order; … that miraculous effects are only frauds or illusions; … [and] that religion was made only for the simpleminded." This Gallic glorification of Pomponazzi, which began with Gabriel Naudé, Pierre Bayle, and Jean-Pierre Nicéron, gathered credit with Renan, who passed it on to other distinguished scholars.[2]

Naudé, a physician, librarian, and polemicist associated with Mersenne, Gassendi, and other innovating intellectuals, had good reason to be interested in Pomponazzi's views on demons and miracles. Those issues were newsworthy when Naudé began his literary career in the 1620s. Episodes of demonic possession from Marthe Brossier's case in 1598 in the Loire valley to the nuns of Loudun in 1634 gave scandal and caused bloodshed in France. A scare of a different kind excited Paris in the summer of 1623, when posters notified the city that the invisible Rosy Cross brothers had arrived. A year later in Paris, a suppressed debate on matter-theory angered Aristotelians, insulted Paracelsians, and provoked the rulers of state and church. Meanwhile, a few weeks after the Rosicrucian publicity was posted, Naudé replied with his mocking *Instruction to France about the Truth of the Story of the Rosicrucian Brethren*.[3]

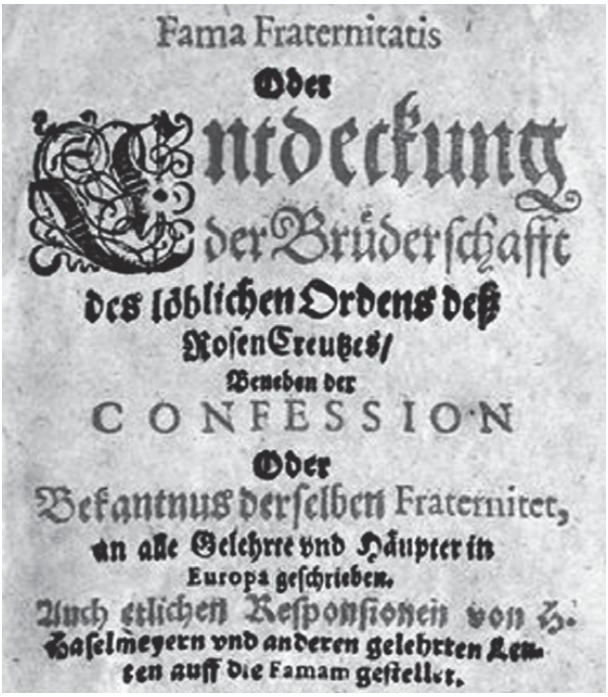

Fama Fraternitatis
Oder
Entdeckung
der Brüderschafft
des löblichen Ordens deß
Rosen Creutzes/
Neneben der
CONFESSION
Oder
Bekantnus derselben Fraternitet,
an alle Gelehrte vnd Häupter in
Europa geschrieben.
Auch etlichen Responsionen von H.
Haselmeyern vnd anderen gelehrten Leu-
ten auff die Famam gestellet.

Figure 85. Rosicrucian Publicity.
(Anon., 1615, title-page)

For Pomponazzi's reputation, the pivotal event of those panicky years was the burning of Giulio Cesare Vanini in Toulouse in 1619. Part of the evidence that brought Vanini to the stake was his *Wondrous Mysteries of Nature, Queen and Goddess of Mortals*, which appeared in Paris in 1616: the author had cribbed whole sections from Pomponazzi's book *On Spells*. Vanini's execution renewed the old fights about that philosopher, whose naturalism now seemed more threatening than ever. One of his critics in France was Pierre le Loyer, whose study *Of Ghosts or Apparitions* (1586) had appeared in an enlarged edition just after the turn of the century and became a target for Naudé in his *Apology for All the Great Persons Falsely Suspected of Magic* (1625).[4]

Seeing the author of the *Apology* as a sceptic and a critic of occultism is fair enough. But Naudé was also (at least officially) a Christian Aristotelian who believed in natural magic and – in principle – demonic possession. His *Apology* worries that Aristotle's natural philosophy has been "rendered greatly suspect and dubious by a swarm of innovators …

who truly have no other design than to shove this philosophy aside and ruin the great edifice that Aristotle and … his interpreters have labored to build." Since Pomponazzi was not a rebel against Aristotle and hence not rash and unreliable, Naudé did not put him on the roster of swarming innovators. He knew that the Peripatetic system was in trouble, but he thought of its decay as a phase of history, not an achievement of philosophy – in the way that Pomponazzi had described great changes of religion: Aristotle's ideas were dying not because they were unsound but because their fated time had come.[5]

Naudé learned Aristotelian school philosophy at Paris and at Padua, and during his long stay in Italy he studied with two of its last creative practitioners, Cesare Cremonini and Fortunio Liceti, both heirs of Pomponazzi. The *Naudeana* – a collection of table talk published in the eighteenth century that may or may not record Naudé's remarks – has him saying that Italy "abounds in the kind of people who dig as far as possible into nature and believe nothing more," but also that Italy is "a land of swindles and superstition, where some believe too little, others too much, talking about miracles all the time without reason or truth." Liceti "believes only in Aristotle and mocks all the religion of the Italians." As for Cremonini, he is

> a great person, … wised up (*déniaisé*), cured of stupidity and knowing the truth, though in Italy one dare not say so. All the professors in that country have wised up … and have been disabused of the vulgar errors of the age. They have a good understanding of Aristotle's thought, of whose spirit Cremonini is a … perfect epitome … , and there are quite a few in Italy who believe no more than Cremonini, like Machiavelli, … Cardano, … Pomponazzi, … and Vanini.[6]

What the *Naudeana* say about Naudé's opinion of Pomponazzi is not straightforward. The Italian rebel had been in "great danger of being burned … [and] made an *Apology* for his book that was worse than the book itself. I have never known a philosopher who did not praise Pomponazzi, even those who have written against him." He was "a good man," according to Naudé, and no one "has been able to refute his arguments." On the other hand,

> he wanted to give a natural reason for the miracle of the revived Lazarus in his book *On Spells*, like a physician of Montpellier called La Porta, … though it's all just stories and empty phrases, pure impieties punishable by fire, by flame and iron. Pomponazzi was an atheist or at least a very dangerous libertine because he was smart. This La Porta was a Jew.

Figure 86. Faustus in a Circle with His Book, Summoning Mephistophiles. (Marlowe [1620], title-page)

Such loose, vicious talk made good reading for the intellectually mobile on the eve of the Enlightenment. Some critics think that the *Naudeana* record nothing but the prejudices of the early eighteenth century, nothing much about Naudé, not to speak of Pomponazzi. But in a French gossip book published after 1700, why the enthusiasm for such old news about an Aristotelian from Italy?[7]

When Prospero prepares to break his staff in the last act of *The Tempest*, he also means to drown his book. Books were vehicles and tokens of magic: the Faustus who sells his soul to the Devil is a learned man, and Prospero's "secret studies" include "the liberal arts," a curriculum preserved in libraries since antiquity. Old Greek and Latin texts that endorse Prospero's "rough magic" had been recovered by scholars who saw the age of those books as proving their truth and value: "what is oldest is most honored," says Aristotle, "and the most honored is that by which we swear." Aristotle and other ancients were witnesses for theories of

magic. Data to instantiate the theories came from old catalogs of magical objects. And the ancient theology supplied a genealogy for magic. When Shakespeare's players put *The Tempest* on in 1611, the theory of natural magic, its empirical foundations, and its doxography were still accepted by educated people like Naudé and Descartes, while both were still in school.[8]

Like other boys – we may suppose – Naudé and Descartes collected treasures: a pebble, a leaf, a rabbit's foot. The old sages had also collected things, catalogued them in natural histories and classified some as magical objects: the magnet, the heliotrope, the remora, the electric ray, the lion that fears the cock, the basilisk whose gaze is lethal, and many others. Their properties were so puzzling that wise men needed theories of magic to explain them. The resulting inventories, made coherent by the theories, were bookish constructions. Each item gained power from its textual association with all the others. Even for veridical phenomena like the numbing effect of the torpedo or a magnet's power to attract iron, this association was purely textual – *livresque*, in fact. When contemporaries glossed the old texts with current experience, the usual result was to confirm the reports that had stymied the ancients – not to provide better explanations. Europe's high culture was still bookish, a culture of erudition. As far as magic is concerned, the facts could fit between the covers of a book for Prospero or Faustus to consult.

After Naudé was born in 1600 and Bruno was burned, however, some innovators came to prefer reason and current experience to erudition and past authority, thus putting distance between the rebirth of letters and what came next. The discontinuity is conspicuous in the case of magic. As new mechanical, alchemical, and atomist theories displaced scholastic natural philosophy, the innovators also worked to disenchant the most elusive items in the catalogs of magical objects. By reviewing the data and testing new theories, they replaced the old natural philosophy with different ways of looking at the world – an immense transformation. Naudé, a librarian who did not quite make the transition, and Descartes, a philosopher who led the way, were contemporaries. Both despised the 'occult philosophy' – but in different ways.[9]

When Vanini was burned in Toulouse, his books may have provoked the authorities as much by their readability as by restating Pomponazzi's astrological naturalism. Vanini's pyre lit a beacon in the ten troubled years between his *Divino-magical Amphitheatre of Divine Providence*, published in 1615, and Mersenne's *Truth of the Sciences against the Sceptics*. During this

critical decade, as the Thirty Years War erupted and Descartes went off to fight and meditate, Robert Fludd finished parts of his *History of Each Cosmos*, and Campanella's *On the Sense in Things and on Magic* saw its first edition. During these years when Mersenne was preparing his massive Genesis commentary and Gassendi was composing his *Paradoxical Exercises against the Aristotelians*, Campanella tried to replace the scholastic foundations of magic with a new metaphysics, while Fludd's theosophy took occultism off the agenda of philosophy.

As the debate about magic heated up, Vanini was a collateral target for the Jesuit François Garasse in *The Strange Teaching of Today's Finest Minds* (1623). The Jesuit's main objective was Théophile de Viau, a poet whose woolly pantheism was enough to excite the blasphemy-hunters: his vaguely heterodox lyrics reminded them of Vanini or Bruno. Only a month before Garasse's book appeared, the Rosicrucian posters went up in Paris, greeted not only by *Frightful Pacts Made between the Devil and the Pretended Invisibles*, published anonymously in 1623, but also by Naudé's more refined *Instruction* – his debut as a scourge of superstition.[10]

Shortly after 1600, in Tübingen and elsewhere in Germany and Austria, a few eager Protestants had been inspired by the promise of a new century to call for a universal reformation that would enlighten Christendom and deliver the illuminated from bondage to the Pope. By 1616, some of this wishful thinking had been written up and printed, finding its way to Paris and causing a memorable fuss. Years later, John Locke recalled stories about "a brotherhood come to town to cure all diseases and doe other rare things – amongst the rest make them that desired it invisible." The notices posted in Paris confirm the attractions of invisibility:

> We deputies of the chief college of the Brothers of the Rosy Cross, during our stay – visible and invisible – in this city, by the grace of the Most High to whom the heart of the just turns, we show and teach, without books or marks, how to speak all the different languages of countries where we wish to be, in order to get people like ourselves out of error and death.

Another report about life in Paris agrees that in those days "various tales were being told about the enlightened brothers," claiming that they "had instant knowledge of whatever they wished to know about languages, arts and sciences, with no work and in a few days, and that starting with the cheapest metals, … they changed them into gold." But the same story concludes that a hoax had caused all the gossip, naming the chief hoaxer

as Étienne Chaume, an ambitious young man who later studied medicine but was no older than twenty at the time. "To have fun and joke, as young people will," Chaume amused himself and his friends – and duped generations of scholars who would labor to track down a secret that was really a sham. To bulk up his prank, Chaume "added much of his own making, particularly the fact that people like this were, at will, capable of seeing without being seen.... He prepared posters displaying these frauds, ... showing the posters on street corners."[11]

After plague broke out in August of 1623, the Rosicrucian frenzy kept Paris buzzing for nearly a year. Some controversialists – including Marin Mersenne – went to press, hoping to link the affair of the Invisibles with some conveniently similar scandal. The mysterious visitors might be Protestants, atheists, libertines, naturalists, alchemists, or Paracelsians: take your pick. A few observers were quick to spot the ruse, but only Naudé wrote a book to mock it. Since the victims of his enemies were his friends, and since he loathed the Jesuits, Naudé (indirectly) took the side of the poet Viau – burned in effigy as a godless libertine in front of Notre Dame while trying to escape to England. Viau's loudest Jesuit opponent was Garasse, whose abuse of the poet provoked Naudé – but only a little. His cagey response was to defend Guillaume Colletet, a lesser poet condemned by the authorities along with Viau and identified by Naudé only as "*le sieur C.*"

Since Naudé thought that most people are idiots, incapable of following such clues, why he bothered to choose sides so delicately is hard to say. More obvious is why the Rosicrucian fakery irritated him: he feared the bogus publicity and the resulting hysteria as threats to civic order. Along the way, since Rosicrucians were supposed to know all about alchemy, he also attacked Paracelsus and "various other credulous and superstitious melancholics": like the imaginary Invisibles, "the Luther of medicine" promoted "a pernicious novelty" with millenarian ideas that gave comfort to the Jesuits by feeding nightmares of apocalypse.[12]

On September 4, 1624, almost a year after the Rosicrucian posters were put up, the Parlement of Paris, instigated by the University's Faculty of Theology, issued a decree against Jean Bitaud, Étienne de Clave, and Antoine de Villon for "posting a public challenge to all the schools, sects and great thinkers" – in the words of Jean-Baptiste Morin, who had not yet written his huge *Gallic Astrology*. Morin was in competition with Villon, another astrologer teaching in Paris: Villon, known as "the soldier-philosopher," may have enlisted Bitaud and De Clave, who later made his own reputation in alchemical medicine. Parlement banished all

three, had Villon fired, and threatened to execute anyone who accepted their "maxims against ancient and approved authorities." The fourteenth of the theses publicized by the plotters concludes that

> two sayings of the ancients – namely, that all are in all and that all are composed of atoms or indivisibles – were mocked and censured by Aristotle out of ignorance or, more accurately, malice. Because both statements are in keeping with reason, genuine philosophy and the anatomy of bodies, we are determined to defend this view and uphold it fearlessly.

The Faculty of Theology denounced this proposition as "false, reckless and erring in faith," using similar inquisitorial jargon to condemn other theses that reject the scholastic basics of prime matter, substantial form, and real accidents – seen as fundamental to "the most blessed sacrament of the eucharist." Theses insulting "the ignorant mob of chemists and also Paracelsus," along with related criticisms of "Aristotelians" and "Peripatetics," get no comment from the theologians, who see those disputes as "purely physical or chemical." In some versions of the posters, however, a fifteenth thesis promises to castigate "Aristotle, Paracelsus and the whole cabal of ancients" for their common errors in matter-theory.[13]

The three condemned insurgents were excited by atomism as an exit from the dead-end of elements – both the scholastic kind and the alchemical – as physical primitives. Since fire, air, water, earth, salt, sulphur, and mercury all have distinct properties of their own, how can just *those* property-bearing items account for the countless *other* qualitative distinctions found in nature? Atoms, lacking such troublesome features, might do the trick. But atomism, by undercutting scholastic physics and metaphysics, would also undermine key religious doctrines: the transubstantiated eucharist and the deathless human soul. These were worries for the Bishop of Paris when, in the king's name, he formally condemned the Cartesian system in 1671 and alluded to the 1624 decree. Although the threat was grave, contemporary critics of the 1624 posters were less alert to the perils of atomism. It was easier to torment a mediocre poet and circle the wagons around Aristotle, defending this heathen bulwark of the faith against innovation of any kind.[14]

Naudé, supporting Théophile de Viau with silence, promises that "reason, authority and experience" will be the "principles and foundation" of his advice to Paris. He had already shown what his main standard was, apologizing because "ignorance … has not allowed me to gather from the young buds and new shoots of my studies the fruits of erudition that

I judge necessary to combat this monstrosity and erroneous persuasion." To fight credulity, Naudé arms himself with learning – the weapon he knows best. He announces his tactics in the first words of the first chapter of the *Instruction*, previewing the book's main finding – that the French are gullible, easy marks for Rosicrucian con-men:

> Phlegon of Tralles, freedman of the Emperor Hadrian, writing about Egypt in his prince's name to a Roman Senator remarkable for having earned his third consulate, begins his letter with the judgment that he makes of this land: 'I have learned, Servianus, that the Egypt you praise to me is completely inconstant, wavering, flitting after every turn of rumor.' Forgive me, sirs, if by applying this text to France, I seem intent on censuring your actions.

In a pamphlet written in two weeks while the Rosicrucians held his city spellbound, Naudé attacks this newsworthy delusion by exhuming the words of a minor Greek writer buried under the centuries. Publius Aelius Phlegon was a chronographer, topographer, and mystery-monger of the second century CE whose work survives only in fragments and testimonia. Even when Naudé was at home, Phlegon's was no household name, which is the whole point of this conspicuous deposit of erudition.[15]

For readers who are curious about Phlegon, Naudé leaves a clue in a marginal note, citing Paolo Crinito's book *On Honest Teaching*, a literary miscellany attacked as superficial by Erasmus soon after it was published in 1504. Naudé gets all his information about Hadrian and Phlegon from Crinito, who had copied a letter concocted under the name 'Flavius Vopiscus' in the *Augustan History*, the title given by Casaubon in 1603 to a ragged collection of imperial biographies, now seen as unreliable and dated to the late fourth century. What Naudé does not say is that 'Vopiscus' introduces Phlegon's letter with remarks on the labile "Gallic character" – in the person of Saturninus, a soldierly Gaul groomed by Emperor Aurelian to succeed him, provided he stays away from Egypt. Since Saturninus is a Gaul and therefore suggestible, he will be corrupted instantly by the Egyptians,

> those flighty enthusiasts, bragging, insolent, unreliable, unrestrained, hot for novelty even in the songs they sing in public – versifiers, makers of witty sayings, astrologers, diviners, healers, with Christians among them and Samaritans, including people who are always displeased by the present situation even though their freedom is unbounded.

As descendants of the stolid Saturninus, the good Christians of France will find the crazy Rosicrucians irresistible: that is Naudé's "instruction" for his countrymen.[16]

But the instruction is oblique, imparted to the literati who can follow Naudé through his pedantic obstacle course. Allusions to obscure Greeks or Romans are a classicist's reflexes and ploys; even Montaigne, also writing in the vernacular, relies on remote literary authority to authenticate his experience of himself and current events. Having opened his book with an insult from Phlegon, Naudé closes it with a dig from Persius – a more famous writer identified only as "the satiric poet": if you need to ask, why do you need to know? If they recognize Persius, the well-read sheep in Paris will separate themselves from the goats, realizing that "none of your incense will induce the gods to put a gram of what's right into a fool's head."[17]

In between Phlegon and Persius, Naudé amuses himself by playing philological hide-and-seek. After instructions from Aristotle's *Rhetoric* on the pleasure of acquiring new information comes advice from Cicero *On The Orator* and – borrowed silently from Gerard Vossius – from Synesius *In Praise of Baldness*, warning about easy cynicism, cheap novelties, and vulgar delight in the monstrous: not to be seduced by fads is the main lesson. These conservative sentiments culminate in a passage that puts Naudé's technique on display while expressing his unease with originality. He warns that "innovation in the sciences is risky" but confirms this maxim indirectly by recalling

> an opinion I used to imagine as true, extraordinary and entirely deserving the ardor of the modern mind – that just as the *politiques* claim that no one ever valued liberty at the cost of his blood who finally enjoyed its peaceable possession, so likewise might we say that among all those who profess letters, the enjoyment of them is expected only for those generous types who, not to be taken as tacitly approving the opinions of their masters, have themselves, by the novelty of their own opinions, obliged others to follow them. It offended me to see that so many interpreters were ready to laugh at the satiric poet –

Horace this time, not Persius –

> who to pay them back calls them 'a servile herd.' Seneca, his sharp wit rousing my spirits, put it to me daily: 'Zeno said this, but what about you? Cleanthes said it, and you? How much farther will you go as someone else's subject? Take charge and say something worth remembering; give us something of your own.' And to confess it in

> a word, the small gain I saw being made in the knowledge of nature by twelve thousand interpreters, who – all but a hundred or so – have wasted their time in commenting on Aristotle, gave me the courage to advance this proposition and to bend all my efforts to its execution. But after carefully considering how many ridiculous opinions, monstrosities and confused, ill-begotten fantasies slip in when we agree to be open-minded, I have recognized that the maxim of Pythagoras – 'don't take the travelled road'– is a calamity quite prejudicial to letters and capable of casting a person into an inescapable labyrinth.

If we take Naudé at his word, it took several dead sages to lure him toward something new – until the spectacle of contemporary failures to reform Aristotle's natural philosophy persuaded him that innovation is a maze and a trap. Conflicting opinions paralyze the librarian, leaving him cornered by disputatious books.[18]

We can see why Naudé was wary of originality from his list of "whims of learned men." Though some are scientists by post-Cartesian standards, other choices show that for Naudé's generation the scientific revolution was still an insurrection. Among four dozen cases of capricious novelties, he names "Trithemius with his steganography, Dee with his hieroglyphic monad, Giorgi the Venetian with his cosmic harmony, … Bruno with his shadows of ideas, Raymond Lull with his dialectic and Paracelsus with his magical commentary on the apocalypse." Alongside them he also lists "Copernicus spinning the world, … Kepler … showing the structure of his celestial harmony, and Santorio teaching … the amount of your insensible transpiration." Since Naudé could not decide which – if any – of Aristotle's detractors would prevail, he stayed with Aristotle in philosophy, though philosophy was not his calling. None of the innovators – philosophical or not – convinced him to change the habit of deference to old texts that kept Aristotle paramount when he was a boy.[19]

Some of Naudé's friends were the 'learned libertines' – Gassendi, Élie Diodati, François La Mothe Le Vayer, and others. Gassendi, the best philosopher of the group, belittled magic in a technical Latin intelligible mainly to other philosophers. Philosophical Latin could not compete with Naudé's brash vernacular, however – the polemical speech that could make magic unfashionable without much harming its academic standing. But to devalue occultism as bad taste, Naudé and the libertines had to report – at least superficially – on the complicated combat between traditional school philosophers and sceptical, naturalist and atomist innovators. Seeming to have inside information, Naudé's small circle posed as *déniaisés* – critics wise to the vulgar nonsense of the mob. Protected

INSTRVCTION
A LA FRANCE
SVR LA VERITE
DE L'HISTOIRE DES
FRERES DE LA
Roze-Croix.

Par G. NAVDE' Parisien.

O quantum est in rebus inane. Pers. Satyr. 1.

A PARIS,
Chez FRANÇOIS IVLLIOT, au troisiesme pillier de la grand' Salle du Palais.

M. DC. XXIII.
AVEC PRIVILEGE DV ROY.

Figure 87. Naudé's *Lesson for France*.
(Naudé [1623], title-page)

by their patrons, they risked an evasive – sometimes hypocritical – challenge to orthodoxy. Save for Gassendi, they rarely replaced old learning with anything new, usually exploiting their erudition to promote a sceptical attitude, not to apply sceptical arguments to current controversies. Their philosophies were eclectic; none followed Epicurus as closely as Gassendi; none stayed as satisfied with Aristotle as Naudé. And even Naudé saw the cracks in the Peripatetic fortress, as it collapsed under the strain of its own subversive naturalism, aggravated by challenges from the "swarm of innovators."[20]

Erudition and rhetoric came more easily to Naudé than philosophy: that much is obvious from his first, incoherent blast against the Rosicrucian hoax and cognate delusions, including "magic, Cabala and Hermetic philosophy." Although the *Instruction* shows signs of purposeful investigating, its digressions are distracting and its clearest conclusion is an elitist platitude: the French, especially the common people, are too easily had. The affair of the Rosicrucian Invisibles was just a practical

joke, "pure mockery, an invention of some waggish funster." Naudé's account becomes more serious when he proposes a theory of history to explain the Rosicrucian unrest: after great reformations, like the religious upheavals of the previous century, belief shatters; Rosicrucianism was a scrap from the last big break-up.[21]

Historical patterns are a theme of Naudé's next and more substantial effort, the *Apology for All the Great Persons Falsely Suspected of Magic*, which opens with a statement of principles and a concludes with case histories: the stories are about ancient, medieval, and Renaissance notables slandered (according to Naudé) as magicians. His main principles are rules of evidence and methods of historical inquiry. The first rule is to assume everything false until scrutiny makes it surer: common opinion is gullible; witnesses lie and forget; individuals and traditions canonize their mistakes by repeating and aggravating previous errors.

As a builder of libraries, Naudé was an expert on the easy multiplication of authority in the age of the printed book: "the number of fools is infinite, and contagion is most perilous in the press." Most authors are too lazy to check their sources, but Naudé goes hardest on the "historians and demonographers" – Wier, Bodin, Delrio, Le Loyer, and others who are the "main architects of this labyrinth of false opinions" about magic. Watching from his "lighthouse … in the squalls and storms of vulgar belief," he promotes the critical reading of original texts by attending to context, chronology, and authorial circumstance. Using such methods, he sees why famous people had been accused of magic so often. "Political cunning, profound and uncommon learning, knowledge of mathematics, writing books, superstitious habits, heresy, hatred, the ignorance of the age, a too frivolous belief in many fabulous things, and carelessness and lack of judgment in authors and writers" – all these are grounds or motives for suspicion. But Naudé settles on three: talent and ambition in the accused celebrities; idleness and sloppiness in their accusers; ill will and gullibility in the deluded multitude.[22]

Applying his principles to relatively recent cases, he attributes Peter of Abano's notoriety to false attributions of books he had never written and false inferences from those he had written. Cornelius Agrippa, by contrast, had actually produced a volume about magic. But he also wrote a declamation on scepticism, and he was not responsible for the pseudonymous fourth book *On Occult Philosophy*, a creation of "the avarice of booksellers." What Naudé finds culpable in magic is illicit ritual affecting human or spiritual persons, not theorizing meant to explain and then modify the world of nature. This commonplace distinction fits his

division of magic into divine, theurgic, goetic, and natural varieties, of which he absolves only the first and last.[23]

Conceding that most of his slandered celebrities had actually advocated an innocent natural magic, Naudé defines it in the usual way as "joining passive effects to active powers and bringing elementary things from here below nearer to the actions of stars and heavenly bodies," a formula that would have satisfied Pomponazzi – or Francis Bacon. Naudé cites Bacon to confirm that natural magic belongs to natural philosophy and is "nothing more than practical physics, as physics is a contemplative magic." He can accept natural magic because it is "easy to untangle from an infinity of superstitions." This familiar distinction – repeatedly confirmed by renowned experts – will clear the names of the dishonored dead. Despite the polemical vigor of Naudé's *Apology*, the book resists and perhaps retards the disenchantment of natural philosophy by treating natural magic as a respectable belief – not long before Descartes published his *Discourse*.[24]

The limits on Naudé's struggle against magic are also evident in his *Advice on Establishing a Library*, whose first edition appeared in 1627. He advises his current patron, Henri de Mesme, "to collect … all sorts of books under certain precautions … , since a library established for public use should be universal, containing all the main authors who have written on the great variety of particular subjects, especially all the arts and sciences." In the end, caution yields to ambitions for a *universal* library: Naudé aims "to satisfy the curiosity of readers" on the principle that "nothing better recommends a library than that each person find what he seeks there." Most of his *Advice* is a scheme for acquiring and arranging books, using an encyclopedic approach that bolsters the authority of magic by reflecting the common beliefs of the day. He starts with "all the first and principal authors, ancient and modern, … accompanied by their best and most learned commentators in each discipline," naming Albertus Magnus in theology, Jean Fernel in medicine, Girolamo Cardano in astrology, Roger Bacon in optics, and Synesius on dreams.[25]

When he singles out a few books and authors for real genius, he puts Erasmus, Justus Lipsius, and Isaac Casaubon alongside Jean Bodin, Cardano, and Patrizi. For admirers of naturalism – particularly Aristotelian naturalism, the kind that Naudé likes – the last three choices are eccentric but plausible, though Agostino Nifo, Alessandro Achillini, and Pomponazzi will have been safer bets. In the domain of natural philosophy, most of Naudé's selections keep a place for natural magic

in the universal library. To stock such a collection, certain choices were inevitable: Ulisse Aldrovandi in zoology, for example – inviting another look at the old lists of magical objects. Reading Plato soon leads to reading Ficino and his Neoplatonic speculations about magic. Even opponents of one sort of magic or another – Giovanni Pico against astrology, J. C. Scaliger against Cardano, Thomas Erastus against Paracelsus – have commitments of their own to occultist erudition.[26]

He recommends "curious and uncommon works, such as the books of Cardano, Pomponazzi, Bruno and all those who deal with Cabala, artificial memory, the art of Lull, the philosopher's stone, divination and like matters," reasoning that

> although most of them teach nothing but vain and useless things and I regard them as stumbling-blocks for those who enjoy them, nonetheless, if only to have something to please the weak-minded as well as those of stronger intellect and to satisfy at least those who want to look at them in order to refute them, one must collect the books that treat these things, though among the other books in a library they are as serpents and vipers among other animals.

This is a stern verdict on the occult philosophy, and one may safely read it that way – at least as evidence of Naudé's sincere intentions. He loathes occultism. But his loathing is ineffective. He means to combat magic by overwhelming it with erudition, searching the shelves to find the best refutations. What he means by 'refutation' is clear enough: it is a task for scholars reading in a universal library.[27]

Erudition and refutation – as Naudé understood that word – are daughters of Mnemosyne, whose temple is the universal library. When Descartes abandons Memory's house, he does not really demolish it: he just walks away, having doubted all the axioms of the building's architecture. He repudiates history, philology and the enterprise of scholarship to clear a space for something completely different – including novelties beyond Naudé's experience. Not novelty but memory, just one of the faculties that Descartes methodically distrusts, is Naudé's greatest strength in all he writes, including the bulky, rambling volume called *Mascurat*, known by its official title as the *Judgement of All That Has Been Printed against Cardinal Mazarin from January 6 to the Declaration of April 1, 1649*. Few books could have been more annoying to the author of the *Discourse on the Method*.[28]

The printer Mascurat and Sainct-Ange, a bookseller, are the speakers in this huge dialogue that relays "an infinity of choice information and

curious remarks on the lampoons of the day and on the deeds of Cardinal Mazarin." Sainct Ange complains to Mascurat that "you're always referring me to histories as if I had a memory as good as yours for retaining them and as much inclination to read them." "Each takes as much as he can get," says Mascurat, explaining that he only needs to "pocket a good portion of the things I want to remember." This provokes a little joke on idioms involving pockets and what can go into them –*les yeux, les dents, le nez* but not *la mémoiré* – and then a digression on Angelo Poliziano's use of *exemptilis* ('removable') in his *Lamia*, a polemical Latin prologue to Aristotle's *Prior Analytics* named for a Roman hobgloblin who terrified children by popping her eye out of its socket. Unable to resist the cue, Sainct-Ange says "dear Mascurat, since you've mentioned fairies, be kind enough to tell me by the way if there are any," to which Mascurat replies that

> philosophy forbids me to believe that there ever have been such monsters in nature, but … the superstitious and foolish beliefs of the ancients were not so stern and onerous as ours.… In place of our witches who do nothing but evil, … they have these good goddesses … who ordinarily did only what is good and proper, like this Lamia.…Today's fabulous fairies are successors to the Fates of the ancients, … both being ambassadors and interpreters of heaven's wishes for man.

The last allusion is to Hyginus, a mythographer, discussing the *Parcae* – a learned but indefinite conclusion to an argument that opens with a strict philosophical injunction against such beliefs, whether heaven-sent or not.[29]

Philosophy dissipates in a fog of indeterminate erudition. Naudé has more faith in his memories of ancient wisdom than in two contemporary alternatives: the methodical scepticism of Cartesian philosophy, and the empirical procedures of Baconian naturalism. His pocketful of recollection comes from old texts, but the ancient testimony – because of its scope and variety – is as corrosive as the method of Descartes, without the compensating rigor or positive results. "Some minds are wonderfully disposed to believe nothing," says Naudé, while others "are still more eager to doubt nothing." He stands – but not too tall – with those of little faith: in the treacherous time of the *Mazarinades*, his disbelief is tempered, even for something as disreputable as occultism. While advising Sainct-Ange on memory as a natural faculty, Mascurat warns him away from

> Giordano Bruno and all who profess artificial memory.… All they say about it and promise is … pure charlatanry.… I am as far … removed from

IVGEMENT
DE TOVT
CE QVI A ESTE' IMPRIME'
CONTRE
LE CARDINAL MAZARIN,
Depuis le ſixiéme Ianuier, iuſques à la
Declaration du premier Auril mil
ſix cens quarante-neuf.

Figure 88. Naudé's *Mascurat*.
(Naudé [1649], title-page)

> this artificial memory, ...from the art of Lull, Cabala, magic, alchemy, divination, spells, and all such vanities as I am scornful not only of those who accuse Cardinal Mazarin of complicity with three magicians executed in Sicily or of having participated in a witch's sabbat ... but also of those who are convinced that such things are possible.[30]

Doubting the possibility of magic and witchcraft, Naudé takes a hard line and then softens it, letting his spokesperson concede "a little more truth" to tales of demonic possession – even if most are malicious lies or figments of diseased minds. Aware of the abuse heaped on Michel Marescot – a physician – for debunking the possession of Marthe Brossier, and knowing the risks taken by others for looking critically at the later scandals in Loudun and Louviers, Mascurat allows that "one need not say categorically of them all what Monsieur Marescot said of Marthe Brossier, 'much pretense, many natural problems, none demonic.'" And Sainct-Ange worries even about a measured rebuttal of charges that demons had assaulted Mazarin: "take care lest in denying so strongly what everyone believes you acquire one of the chief names of the Anti-Christ: ... *Nego*."[31]

Nicodemus, who came to see Jesus at night, gave his name to a lesser failing: Calvin said that Protestants who dissembled about their faith were Nicodemites. The bloody course of the Reformation in France makes that charge seem facile and arrogant, though the tactic stuck with French intellectuals through Naudé's lifetime and later: Pierre Bayle made an art-form out of this camouflage. When Naudé defends his

Cardinal against magic-baiting, his decision to defend is firm (because it was inevitable) but his means of defense are shaky – an irresolute rationalism on behalf of a weakly held creed – though the method had been tested in the *Apology*. The arguments are historical and philological, not philosophical, and they are empiricist in spirit mainly where Naudé follows his keen nose for fallible *textual* evidence.[32]

Mazarin must be innocent of magic, Naudé claims, because the whole apparatus of magic is nonsense – just silly mistakes exposed by historical and literary criticism. "Our famous Melusine," for example, was no fairy or flying mermaid, just a strong-willed aristocrat who intimidated her subjects: it was her cowed underlings who falsely credited her with supernatural power. The noble Melusine's air of command made her seem enchanted, but in other cases it was vice rather than virtue that produced magical reputations. With Mazarin's Italian origins in mind, Naudé blames the French for demonizing poor strangers whose dress and demeanor they find ugly and outlandish – Spaniards gathering in the Cemetery of the Innocents or Jews accused by the demonographers of "a thousand acts of wickedness … and folly." Such suspicions are reciprocal, Naudé warns: everything changes, depending on who is at home and who is abroad. Anyone might suffer like Agrippa von Nettesheim: "the monks that he mocked and needled, … did they not run him down as a magician?"[33]

When Naudé attacks the alchemists, his objections are not arguments, whether empiricist or rationalist, against their theory of matter – part of which he should accept on Aristotelian grounds. He disapproves of their writings and morals, not their reasons and evidence, and not in any detail, deriding

> the stupidity of their books, the silliness of those who study them and the swindles of all their experiments.… But what about Flamel, Arnold of Villanova, Ramon Lull, Trevisa, Albert the Great, Solomon and all the others, you ask, who are said to have had the secret? Were they impostors? Certainly not: not one of them claimed to have had it. And maybe if they do speak of it, this must be in some bad books attributed to them.

Naudé had a medical education, but his method is a librarian's. His urge to see the documents is evident as he deals with other types of occultism: "as for magicians and enchanters, I say that if you carefully examine the trial-records, you'll find that they were punished not for having done the evil of which they were accused, but only for having wished to do it."[34]

Figure 89. Melusine.
(Jean d'Arras [1527–32], last page)

To show that "magic is a useless science, incapable of producing any effect, just like alchemy," Naudé's method is to assemble the sources and cite them, a habit reinforced by immersion in the classics. As the texts pile up to be sorted, the documentary constraints on knowledge multiply, making it harder to charge innocent people with superstition but no easier to do science. Mazarin was blamed for a "black magic" that contradicts "the rules and maxims of good philosophy." But which philosophy was good in 1649? Galileo debated the "two chief world-systems" in print in 1632, Descartes announced his new method in 1637 and in 1641 he applied it more methodically in the *Meditations*: a year later, Galileo was denied a hero's burial in Florence because a pope forbade it. The Church feared Galileo and Descartes, who were tearing down the framework of natural philosophy that enabled Naudé's readers to take magic seriously in 1649: had his readers not still taken it seriously, Naudé's defense of Mazarin might have

ignored it. As for physical and metaphysical principles that could make magic dangerous – or not – for a bibliophile Cardinal, Naudé has little interest.[35]

Had he wanted to give a full account of the relevant science and philosophy – as Gassendi did, for example – loyalty to Aristotle would have embarrassed him: half-way through the seventeenth century, the best philosophical reasons for believing in magic were Aristotelian reasons. Those reasons, as principled philosophical claims, were no more or less at risk from Naudé's type of scepticism than any other principles of natural philosophy: like Agrippa's, his scepticism was an attitude and a pose, not a method. Part of the pose was to advertise his admiration for Gassendi and other philosophical critics of occultism. But at its liveliest, Naudé's attack on magic is philological, not philosophical, as in this coda to remarks on witches and wizards:

> If there are experiences that prove the contrary, they doubtless resemble the stories about Doctor Faustus … and other romances, where they will be based simply on the hearsay and similar falsehoods of which Ovid said so well, 'have no faith in witches and incantations.' Marcus Aurelius, that wise and learned emperor, rightly counted it among the chief benefits of his education that the philosopher Diognetus had taught him from early on not to believe in any of this twaddle. 'From Diognetus,' he says, 'I learned not to spend time on inanities and to deny any trust to what conjurers and fakes say about enchantments and demonic depravities.'[36]

Naudé wants to impress with eloquence and authority, not to analyze anything – philosophically or otherwise.

He cites "stories about Doctor Faustus … and other romances" to make fun of them, but he also mocks a natural historian, "Claude Menestrier of Besançon, said to be a great naturalist, or rather a great fabulist." Father Menestrier was a papal librarian and curator of collections: like many prominent naturalists, he thought that fossils were sports of nature and products of "plastic forces," not preserved plants and animals. Naudé disagrees, siding with other prominent researchers: after inspecting the physical evidence, he decided that he was looking at the remains of a forest that had fallen long ago in an earthquake. The findings of the experts were indecisive, however, as on many topics of the new science. Some of their debates are recorded in the massive correspondence of Marin Mersenne.

The book-seller Sainct-Ange sees Mersenne as a bankable name. He has "sold many books written by him on all sorts of sciences, but people

still accuse him of believing too easily in many stories and natural experiences." Mascurat agrees, noting that "all people of a good and curious disposition suffer a similar weakness, because they think that others are like themselves and do not believe that anyone would want to trick them by reporting a story." The great Mersenne, his friend Nicolas Peiresc, Federico Cesi who founded the Lincean Academy – all succumb to curiosity, according to Naudé, whose own curiosity is bibliomanic. He can trust the facts of nature if he comes face to face with them, suspending his scepticism as he handles the fragments of a dead forest. But the experience of nature as he usually finds it, written up by experts in new or old books, is no better and no worse than any other printed testimony. He finds it all distorted by the errors and deceits that his scrutiny of books revealed to him. He looks at nature vicariously, with a librarian's jaundiced eye though – in one case at least – he saw her more clearly in a box of rocks than some leading naturalists.[37]

For a campaign against superstition, Naudé had little to lose by ignoring the great mass of natural-historical data compiled in his lifetime. Progress in botany, zoology, anatomy, medicine, and geology was underway and would eventually deplete the catalog of magical objects used to instantiate theories of magic. But the decisive changes that divorced natural history from natural magic were not yet complete when Naudé died in 1653, shortly after Descartes. Not so for magical theory – decisively discredited in Naudé's mandarin world by Descartes, Gassendi, Mersenne, and others whom he knew well, some of them as friends. Some of those critics shared Naudé's scepticism or cynicism, but some also had physical and metaphysical reasons for abandoning magic, while Naudé was content to attack superstition with history, philology, and wit. His cultural weapons were on a par with the natural history of his time but no match for the heavier artillery deployed by philosophers, astronomers, engineers, and mathematicians.[38]

2 REFORMING MEMORY AND MAGIC

Funes the Memorious, an unforgettable Borges character, is the ultimate naturalist and ultimately frustrated: "Funes remembered not only every leaf of every tree in every patch of forest, but every time he had perceived or imagined that leaf.... He saw that by the time he died he would still not have finished classifying all the memories." Not just frustrated but tormented, Funes tells a friend about his memory: "my memory, sir, is like a garbage heap."[39]

The clever Naudé could do little with the garbage except collect, classify, and complain. Francis Bacon, another connoisseur of cultural memory, was a better custodian and critic. Just as Naudé became a minor hero of French rationalism, Bacon became a major hero of British empiricism – mainly for novel ideas about method and institutions. Unlike Naudé, however, Bacon was also ambitious about theory. Yet his philosophy of nature assimilates natural magic without eliminating it: his strongest objections are ethical and political.

Born into a powerful family, Bacon was educated to prosper in the ruling class, as he did: after thirty-seven years in Parliament, he became Lord Chancellor in 1618. That office – which he lost three years later in a scandal – put him at the head of England's legal system after a lifetime in the courts, politics, and government. His experience as an attorney brought him face to face with "the rules and grounds dispersed throughout the body of the … laws" and made him a reformer: he promised Queen Elizabeth "to enter into a general amendment of the state of your laws, and to reduce them to more brevity and certainty." To do so, he would collect, compile, and compare in order "to sound into the true conceit of law by depth of reason, [and] in cases wherein the authorities do square and vary, to confirm the law."[40]

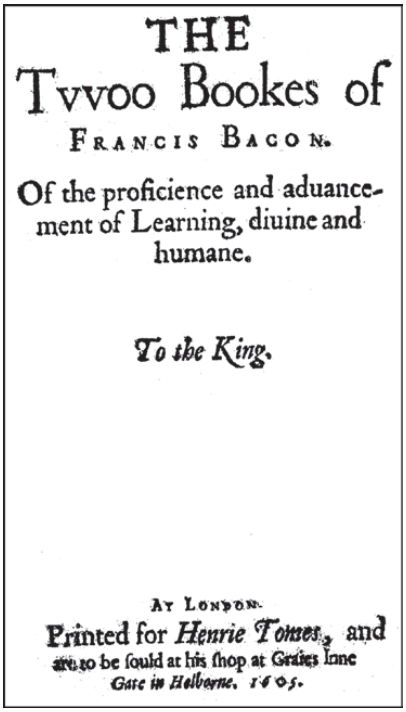
Like Edward Coke, his professional and political rival, Bacon believed that law is not just the sovereign's will but "agreeth with the principles and rules of other excellent sciences." Although governing by laws can work only if an authority promulgates and enforces them, the law – like other sciences – also has principled foundations discoverable by systematic inquiry. The pressure to undertake the project of finding legal principles is great: life, limb, and property will be lost or saved by laws understood or misunderstood. The standards for achieving the desired clarity are difficult, though the needs are plain enough: effective use of laws requires rational assessments of evidence and guidance by rational procedures. If decisions are not to seem erratic or capricious, replicability from one judge or jury to another will be expected. Popular trust (Bacon worked for the Court of Star Chamber) also demands procedures that are public – open to scrutiny and complaint.[41]

Naudé provides some of that in his universal library – which is a public library: by collecting and grouping books, he enables readers to compare and draw their own conclusions. But texts gathered by librarians, from Bacon's point of view, may record nothing but "auricular traditions, feigned testimonies of ancient authors" – hearsay with a pedigree or, at best, speech fixed in print that cannot be cross-examined. These

"whispers of tradition" do the job for Naudé, who parades his wit in recondite allusions meant to intimidate, not educate. Whether the gossip says anything about the world is unimportant: *bons mots* need not testify to anything in particular. But lawyers fight in court about real particulars. Bacon worked out his theories in the courts – not just in libraries – and he theorized about nature, not just about law.[42]

Collect the data. Compile, compare, classify, test, and criticize, following established procedures and applying rigorous standards of evidence. Do this in a public, collaborative way, not by disclosing everything to everyone but by seeking the public good as the monarch's interest, using sovereign institutions to authorize and stabilize rules and procedures, to organize the work of collection and criticism and to communicate results. The enterprise exceeds the work of anyone's lifetime: its immense scope requires collaboration, public support, and perseverance, an ongoing process whose products will be cumulative. Having devised this way of doing things for a reform of law, Bacon takes a similar approach to nature and a reform of natural philosophy.[43]

Part of that reform – the part that made Bacon a famous philosopher – is a project about method, described mainly in books written in his last years, after he withdrew from politics: the *Novum Organum, De augmentis scientiarum*, the incomplete *Instauratio magna* but also the earlier *Advancement of Learning*. The other part of the reform is a new theory of nature – a natural philosophy. Memory or "the custody of knowledge," according to Bacon, is a route to such a theory, assisted by "diligence and labour in the entry of common places" – by recording data, taken indirectly from texts and directly from experience, in books kept for that purpose. But he dislikes the usual "methods of common-places" for data collection: "there is none of any sufficient worth, all of them carrying merely the face of a school and not of a world, and referring to vulgar and pedantical divisions, without all life or respect to action." Because the old way of handling data, obscured by scholastic labels and stuck on empty distinctions, fails to touch the world, much less dig into it, Bacon wants to do better: hence his reform of method. Judged by their response to his books, however, Bacon's contemporaries were less impressed by his method – described mainly in the later Latin works – than by his literary finesse and cultural insights: the vernacular *Essays* were his best-seller, by far. As for natural philosophy, his biggest hit was the posthumous *Sylva sylvarum*, described by a close friend as "an indigested heap" that is not like "books cast into methods." This *Forest of Forests* that fails its author's tests is a jungle of "natural history in ten centuries," whose divisions are


THE
Tvvoo Bookes of
FRANCIS BACON.
Of the proficience and aduance-
ment of Learning, diuine and
humane.

To the King.

AT LONDON.
Printed for *Henrie Tomes*, and
are to be sould at his shop at Graies Inne
Gate in Holborne. 1605.

Figure 90. Bacon's *Advancement of Learning*.
(Bacon [1605], title-page)

chapters of a hundred paragraphs each – more or less in the spirit of Aristotle's *Problems*, another miscellany of natural history. Fluids and their properties are a thread in the first century, where poisoning, purging, healing, embryonic development, and colored feathers also come up.[44]

Speaking of feathers, Bacon points out that this topic

> of our *Sylva sylvarum* is (to speak properly) not natural history but a high kinde of natural magick. For it is not a description onely of nature but a breaking of nature into great and strange works. Try therefore the anointing over of pigeons when they are but in their down. …This is a good experiment not onely for the producing of birds and beasts of strange colours but also for the disclosure of the nature of colours themselves.

Decades later, after the triumph of the *Principia*, "the disclosure of the nature of colours" was still high on Newton's research agenda. Bacon's choice of problems was sometimes wise, then, and his examination of feathers includes "a good experiment." The *Sylva* describes hundreds

Figure 91. Bacon, *Sylva sylvarum*.
(Bacon [1651], title-page)

of experiments, many of them records of trials, not just reports on personal or vicarious experience. The next experiment after coloring feathers involves examining newly hatched chickens to study the function of egg yolk. Then Bacon turns to blister-beetles as a source of irritants, next to a mineral cure for kidney stones, before observing that

> it is received and confirmed by daily experience that the soals of the feet have great affinity with the head and the mouth of the stomack, … and therefore a physician that would be mystical prescribeth for the cure of the rheume that a man should … put camomil within his socks. … It seemeth that as the feet have a sympathy with the head, so the wrests and hands have a sympathy with the heart, … and I conceive that washing with certain liquors the palms of the hands doth much good.[45]

Leaving the topic there for the moment, Bacon promises to return to sympathies. Then he moves on to "the secret processes …that govern nature principally and without which you cannot make any true

analysis." Such secret agents are "the spirits or pneumaticals that are in all tangible bodies [and] are scarce known" because people mistake their effects for those of vacuum, air, heat, the soul or "the vertues and qualities of the tangible parts." In fact, spirits "are nothing else but a natural body rarefied, … included in the tangible parts, … and never (almost) at rest," producing "arefaction, colliquation, concoction, maturation, putrefaction, vivification and most of the effects of nature." The spirits that have such "great effects … have not been observed at all because they are invisible, … but yet they are to be deprehended by experience" – like the atoms of Democritus. Their real effects "are not at all handled, but they are put off by the names of vertues and natures and actions and passions and other such logical words."[46]

The sympathies and antipathies "confirmed by daily experience" and by Bacon's own trials are not scholastic abstractions: he treats them as candidates for reduction to material spirits and their atomic constituents. But when he asks about sympathies and antipathies again in the fifth Century of the *Sylva* – where the question is whether different plants growing in the same soil show a "secret friendship or hatred" – he dismisses the "many ancient and received traditions and observations" as "idle and ignorant conceits." The claims made by the ancients are *idle* because the old authors did not do the *work* of looking closely and systematically. Bacon makes his point, first, by reporting dozens of botanical observations, only then summarizing the defective findings of tradition "lest our incredulity may prejudice any profitable operations in this kinde (especially since many of the ancients have set them down)."[47]

Though Bacon's empiricism is more forceful than Naudé's witty scepticism, what to make of his incredulity is hard to know. Since a physician who resorts to sympathy to explain a cure "would be mystical" in Bacon's view, should unmystical explaining simply renounce sympathies? Is a sock stuffed with herbs just a joke? Then why bother to explain such devices – along with "most of the effects of nature" – by positing invisible particles and spirits made of them? Like Naudé, Bacon read obsessively, devouring the literature on spirits and natural magic by Renaissance philosophers – Ficino, Cardano, Della Porta, and others. He also appreciated the demotic occultism of Paracelsus. And he has harsh words for them all as complicit in the moral and intellectual scandal begun by the Greeks, continued by the scholastics and now to be ended by a great instauration of science. Yet Bacon's criticism of philosophy as a chronicle of degeneracy leaves him tied to that philosophy, and nowhere more than in his views on magic.[48]

In *De augmentis*, for example, he describes a "sound astrology" that resembles Ficino's theory in *De vita 3*. Though he denies that spirit binds the universe together, he concedes that the heavens influence human spirits and that the imagination affects their transmission – even at a distance to victims of the evil eye. He also worries that "the inquiry how to raise and fortify the imagination" may be "a palliation and defence of a great part of ceremonial magic" if people are convinced that natural rather than demonic powers are at work in "ceremonies, characters, charms, gesticulations and amulets." Indeed, he affirms "that imagination has power, … that ceremonies … strengthen that power, and that they be used sincerely and intentionally for that purpose, and as a physical remedy, without any the least thought of inviting thereby the aid of demonic spirits." He admits that "many things … work upon the spirits of man by secret sympathy and antipathy … [like] the virtues of precious stones … [that] have in them fine spirits." Spirits and sympathies take on new meaning in light of Bacon's plans for a substantive reform of natural philosophy, a new physical system including a spiritual account – based on *spiritus*, that is – of matter in a cosmology that borrows from Paracelsus.[49]

Even though he thinks that spirits and imagination are effective in magic and astrology, Bacon insists that ceremonies relying on them are wrong because they help people get what they want without working, making them lazy. His objection is pragmatic, like his complaints about philosophy, which has lured people away from useful learning. Plato trapped philosophy in its original sin of abstract, sterile contemplation, and then he compounded the error by mixing philosophy with religion. Although Aristotle's faults were fewer, his philosophy is wordy, captious, and dogmatic. "Plato made over this world to thoughts," Bacon complains, "and Aristotle made over thoughts to words." As mere speculation detracts from observation, so magic aims "by a few easy and slothful observances" to pluck the fruit that God commanded Adam to seek in the sweat of his brow. Bacon prefers the mechanical arts to the magical because they are laborious, collective, collaborative, institutional, and therefore public and fit to serve the monarch, whereas magic isolates the individual in easy, selfish, secret quests that "aim rather at admiration … than at utility," ignoring the good of the realm.[50]

As the King's good Christian subject, Bacon regards magic as illicit but not ineffective. His response is not to criminalize it but to attempt a reform, by proposing adjustments – derived mainly from Paracelsus, Telesio, and other philosophers of nature – to the standard theory popularized by Agrippa and Della Porta. Most important, he sets aside the

metaphysics of hylemorphism and replaces it with a physicalist account of forms and occult qualities that will be judged by its practical results.

Magical actions are those "wherein the … cause is … small as compared with the …effect": thwarted explanations and amazed reactions are consequences of this discrepancy. Although Bacon's analysis of the epistemic and psychological situation is impressive, he lets the phenomena be explained by a theory of magic and altered or manipulated by arts of magic.

> Those arts … that take more from fancy and faith than from reason and demonstrations are three in particular: astrology, natural magic and alchemy, whose ends, however, are not ignoble.… Magic proposes to recall natural philosophy from a miscellany of speculations to a magnitude of works.… But the methods thought to lead to these ends are full of errors and nonsense, both in theory … and in practice.

Hoping that arts of magic made intelligible and useful by method will rescue philosophy from its moral doldrums, Bacon "would rather have [them] … purified than altogether rejected," so he suggests programs of reform for natural magic and astrology. Even "superstitious narratives of sorceries, witchcrafts [and] charms" will be objects of useful inquiry, supplying data for a pragmatic conception of 'magic' that will redeem its venerable name: despite long use "in a bad sense," the word should be "restored to its ancient and honorable meaning … as the science which applies the knowledge of hidden forms to the production of wonderful operations, and by uniting … actives with passives, displays the wonderful works of nature." Absent that reform, a "popular and degenerate natural magic … lays the understanding asleep by singing of specific properties and hidden virtues, sent as from heaven and … learned from the whispers of tradition." This is the degenerate magic that leaves "man no longer alive and awake for the pursuit and enquiry of real causes."[51]

The reformed magic that Bacon envisions will implement his metaphysics, just as mechanics will put his physics into practice. Metaphysics for Bacon is "the investigation of forms," but the forms are not the scholastic "toys of logic" despised by him and the nature philosophers. "Of a given nature to discover the form or true specific difference or nature-engendering nature or source of emanation," he explains,

> is the work and aim of human knowledge.… In nature nothing really exists beyond individual bodies performing pure individual acts according to a fixed law.… And it is this law … that I mean when I speak of forms.… The form of a nature is such that given the form, the nature

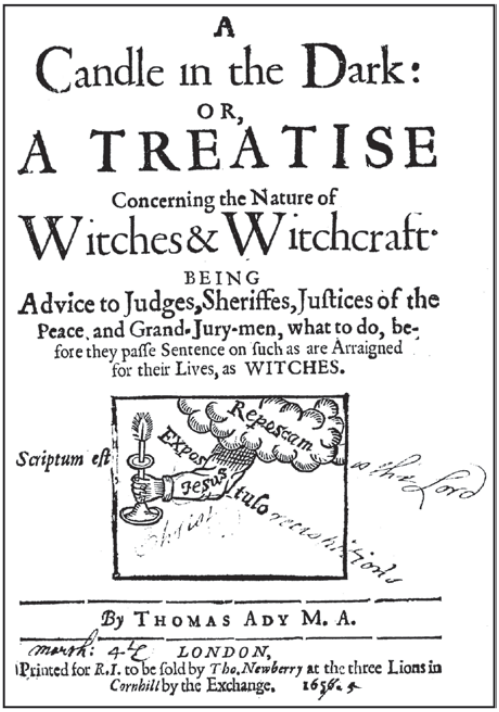

A
Candle in the Dark:
OR,
A TREATISE
Concerning the Nature of
Witches & Witchcraft.
BEING
Advice to Judges, Sheriffes, Justices of the Peace, and Grand-Jury-men, what to do, before they passe Sentence on such as are Arraigned for their Lives, as WITCHES.
Scriptum est
By THOMAS ADY M. A.
LONDON,
Printed for R. I. to be sold by Tho. Newberry at the three Lions in Cornhill by the Exchange. 1656.

Figure 92. New Light on Witchcraft in the Dark of 1656. (Ady [1656], title-page)

> infallibly follows.... [Form] deduces the given nature from some source of being which is inherent in more natures.... He who knows the forms of yellow, weight, ductility, fixity, fluidity ... and so on and the methods for superinducing them ... in some body ... [may achieve] the transformation of that body into gold.

The form that Bacon describes is not a philosopher's abstraction – Platonic or Aristotelian – but what exactly is it: a generative force, a defining essence, a taxonomic distinction, a natural law, a material quality, or an alchemical additive? All will answer to Bacon's description. His focus on features of objects that are material, stable, and distinctive becomes clearer as he examines the phenomenon of heat to illustrate his method. He compiles a long list of "instances" that gradually give an inductive picture of his topic. To fill his method out, he runs through twenty-seven master categories or "prerogative instances," the last of them for "instances of magic" marked by causes and effects out of balance, making them "seem like miracles."[52]

Bacon resents the miraculous as a drag on research. He condemns "the easy passing over of the causes of things by ascribing them to secret and hidden virtues and properties (for this hath arrested … inquiry)." Occult virtues and sympathies are not beyond redemption, however. Instead of ignoring or eliminating them, he traces them to imperceptible physical structures in bodies –"latent configurations" or *latentes schematismi*:

> What are called occult and specific properties or sympathies and antipathies are in great part corruptions of philosophy.… Inner consents and aversions or friendships and enmities (for I am …weary of the words sympathy and antipathy … [and the] superstitions and vanities associated with them) are either falsely ascribed or mixed with fables or from want of observation very rarely met with. Genuine consents …are found in greatest abundance … in certain medicines, which by their occult … and specific properties have relation … to limbs or humours or diseases.

Having confirmed that occult properties work in pharmacy and medicine, Bacon concludes that genuine "consent" or sympathy "is nothing else than the adaptation of forms and configurations to each other" – when two physical structures match.

Schematismus – obviously a term of art – may or may not reflect language about *schêmata* that Plotinus uses to describe magic, which for him is matter-bound but not merely material. To illustrate physical consents in nature, Bacon lists "sulphur, oil, … greasy exhalation, flame, and perhaps the body of a star." His examples are like those that Proclus uses to show how magic flows through a metaphysical series or *taxis*, though any awareness of the texts on Bacon's part is improbable. In any case, the Neoplatonic conception of magic as both god-sent and matter-bound is – from his point of view – a betrayal of natural philosophy that gives up on naturalism. Yet his own analysis of occult phenomena ends in a discovery of forms, configurations and symmetries that are more physical than their Greek ancestors but still too magical for the new science of which Bacon was a prophet but not a priest – a priest like Galileo.[53]

Around 1610 or a little later, Galileo and Bacon were both considering the most compelling evidence from ordinary experience for action at a distance, the Moon's pull on the oceans. If the Moon actually moves the tides, the case for celestial influence improves: astrology has a basis that many people see every day. Galileo tried to eliminate lunar influence and replace it with mechanics, reasoning by analogy: the oceans move like water in a spinning pot. By 1619 he had learned about Bacon's competing

theory and was saved from attacking it by an English intermediary who showed him that his own data on tidal intervals were wrong. Events postponed Galileo's revision until 1632, in the explosive *Dialogues*, after Bacon had already responded in print in 1620. According to the *New Organon*, Galileo's "conception of the ebb and flow of the sea" is simple and wrong – that "the earth rotates more swiftly, and water less swiftly, and so the waters heap up and then in turn fall down again, as is displayed in a vase of water moved rapidly."[54]

Bacon could have left the controversy there: as he says, Galileo was not "well informed on the six-hourly motion" of the tides, whose intervals are twice that much. He goes too far, however, claiming that Galileo "achieved this fiction by granting himself the ungrantable (namely that the earth moves)." Like Galileo, he had read the evidence and arguments for a moving earth in books by "Copernicus and his disciples," whom he snubs in the *New Organon*. And like Galileo on the tides, he immortalized his own egregious error by putting it in a book. Both great thinkers impaled themselves in print. And Bacon may have underestimated the power of books to sink a reputation or save a theory – not Naudé's kind of mistake.[55]

"Anyone who has turned his attention from workshops to libraries and … the immense variety of books … will surely experience a stupendous change of mind," Bacon maintains, seeing "no end of repetitions" on the bookshelves: the correct response, he concludes, is "amazement at the poverty and paucity of the things which until now have held and occupied the minds of men." If bearing the burden of tradition leaves us impoverished by erudition, what about books that have riches to give? Books were vehicles of transformative innovations by Vesalius, Copernicus, and Galileo – authors of books that turned the world upside down or inside out. Bacon understands that much about books, writing that "the art of printing" was one of three inventions that "changed the face and condition of things all over the globe" – the compass for sailing the seas, gunpowder for making war and the printing press for "literature." But what is literature: words but not deeds – *fatti maschi, parole femmine,* according to the proverb?[56]

In Bacon's day no arch-priests of science outdid the ministers of religion either in reviling magic or persistently authenticating it and printing their testimony in books. Sacred proof of an enchanted world – Moses parting the waters by waving a wand, Jacob wrestling with an angel, Jesus blasting a fig tree with words of power, the Lord's disciples raising the dead in his name – was published and royally authorized in the English

Figure 93. Apollyon Attacks Christian.
(Bunyan [1693], p. 73)

Bible of 1611, just before Bacon's political career went into high gear. Of all the English books printed in Bacon's century, second only to the Bible in popular appeal was John Bunyan's allegory of Christian's pilgrimage to the Celestial City – starting the trip with "a Book in his hand." On the way he meets "a foul fiend, … hideous to behold, … cloathed with scales like a Fish, … wings like a Dragon, feet like a Bear, and out of his belly came Fire and Smoak, and his mouth was as the mouth of a Lion." Beelzebub has sent the dreadful Apollyon to attack the Pilgrim. But Christian has a protector – Michael, the devil-smiting angel, who saves him for the next leg of his journey, into the Valley of the Shadow of Death. Where Michael still fought with Apollyon, would magic thrive? The wonder is that it did not keep on thriving in Bacon's and Bunyan's England, which would not suffer a witch to live.[57]

CHAPTER FOURTEEN

DISENCHANTMENT

For a decent person such illusions
aren't worth a moment's thought.[1]

1 MAGIC AROUND 1600

One of the first members of Rome's Academy of the Lynxes, established in 1603 to promote natural philosophy, was Giambattista Della Porta, Galileo's colleague among the *Lincei* and his rival in developing a telescope. Porta had already founded his own Academy of the Secrets of Nature, only to see it fail when the Inquisition accused him of sorcery. He died in 1615, long after publishing *Four Books on Natural Magic* in 1558; after he expanded that work in 1589, many other Latin and vernacular editions followed.

English readers were told by the 1658 translation that "magick is taken amongst all men for wisdom and the perfect knowledge of natural things: and those are called magicians whom … the Greeks call philosophers." This description was commonplace in its time, though now it seems strange for magicians to be called 'philosophers.' "There are two sorts of magick," says Porta: "the one is infamous … because it hath to do with soul spirits and … inchantment … , and this is called sorcery.… The other magick is natural.… The most noble philosophers … call this knowledge the very … perfection of natural sciences." The natural magic traced to ancient philosophers is not the evil demonic magic that "all learned and good men detest." Like Agrippa, Porta claims that this good magic is "the highest point of natural philosophy." And since it is "a practical part of natural philosophy," he argues, "it behoveth a magician … to be an exact and very perfect philosopher."[2]

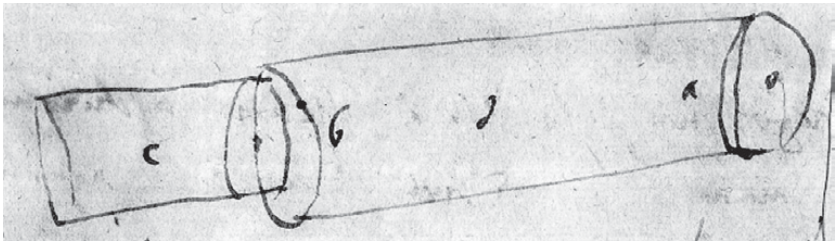


Figure 94. Porta's Sketch of a Telescope, August 28, 1609.
(Biblioteca dell'Accademia dei Lincei, MS 12, fol. 326)

Most of the expanded *Magia naturalis* describes "practical" uses of magic. Its twenty books are mostly recipes and techniques, but Porta ties them to a theory, calling "natural magic" a department of "natural philosophy" as that phrase had been understood since Ficino's time and still would be in Leibniz's day. Astrological prediction, alchemical transmutation, and other applications of magical theories attracted and held the attention of authors, teachers, preachers, healers, and lawyers in early modern Europe. After Francis Bacon, however, philosophers of his stature paid less attention to the machinery of magic than to repudiating its theoretical claims.[3]

Competing and contested theories of natural magic were parts of a larger puzzle: the intellectual and moral status of what Agrippa had called the "occult philosophy," meaning magic, astrology, alchemy, demonology, divination, Kabbalah, witchcraft, and so on. Since late antiquity, various forms of occultism, but especially natural magic, had support from important philosophers, both pagan and Christian, while other philosophers – and sometimes the same philosophers – attacked it. Philosophy's fickle response to magic peaked at two moments: once in the age of Plotinus, Porphyry, Iamblichus, Proclus, and Synesius; and again in the time of Ficino, Pomponazzi, Agrippa, Bruno, and Porta. Ficino's theory, restated by Agrippa, persuaded or provoked many sixteenth-century thinkers – physicians and philosophers especially – whose debates were still unsettled when the century ended.[4]

A century after Porta expanded his *Natural Magic*, the science whose mathematical principles Isaac Newton established was still a "natural philosophy." But by the time Newton quarreled with Leibniz about occult qualities, proponents of the new science were repudiating the magic that the Renaissance had made fashionable. For many eminent thinkers in the sixteenth century, natural magic had been a prominent

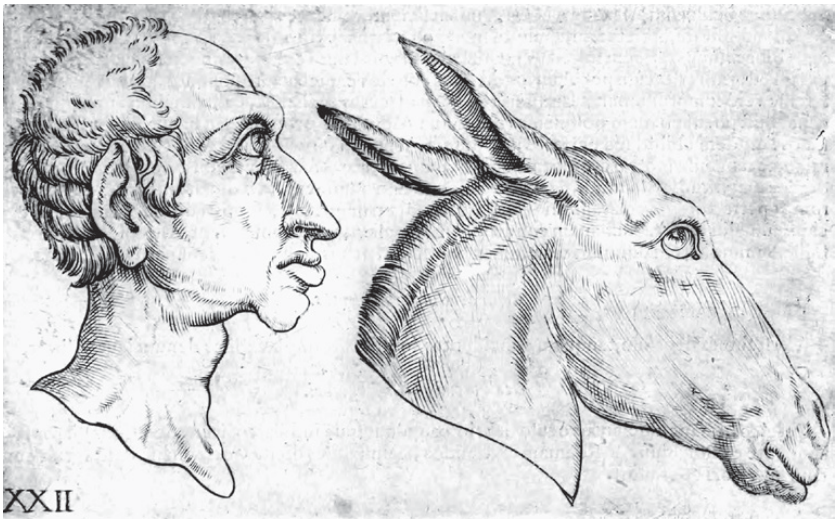


Figure 95. A Mulish Physiognomy by Porta.
(Della Porta [1602], p. 165)

part of natural philosophy. But by the eighteenth century it had become an embarrassment for most intellectuals in good standing. What had been *philosophia* in the Renaissance violated good sense and good taste for *philosophes* in the Enlightenment. The advance guard of the scientific revolution had abandoned magic even earlier: scholars had to exhume Newton's alchemy in the twentieth century because his admirers in the eighteenth century had buried it. Once a source of power and prestige, magic became a scandal. This is why Leibniz could torment Newton with a term of art from the theory of natural magic – the phrase 'occult quality.'[5]

Words used by Leibniz and Newton to trade abuse came from the lexicon of a dying natural philosophy, a way of thinking that had once sustained natural magic as a respectable topic of learned inquiry. The fight about occult qualities and substantial forms – known by Newton and Leibniz as scholastic principles of natural magic – echoed a larger controversy about Aristotelian thought. Neither can be understood without the other.

Modern students of the science that displaced Aristotelian physics, falsely assuming that scholastic philosophy did not interest advocates of Neoplatonic magic, have not always noticed the effect of Aristotle's demise on the decay of occultism – or the reverse. But Porta's readers

were better informed. He cited the Neoplatonists restored by Ficino, but he also summarized the scholastic doctrine of matter and form, substance, and quality as a philosophy of magic. It was this theory – the metaphysics, physics, and magic of hylemorphism – that preoccupied philosophers who argued about natural magic in the seventeenth century. When magic lost its intellectual authority, the loss followed a larger crisis of confidence in the principles of Aristotelian philosophy. Magic had flourished in the sixteenth century after Ficino accommodated his revived Neoplatonism to scholastic teaching on forms and qualities. When magic withered away in the next century, its most effective philosophical critics ignored the Neoplatonists while renouncing Aristotle.[6]

But some opponents of Aristotelianism and related traditions were promoters of occultism. Paracelsus, speaking in a French version of his *Little Surgery* published in 1623, rails against academic medicine for bowing to authority and ignoring experience: "they have never had the wit to invent a medication by themselves … and have written or taught nothing in their academies unless someone else has found it." In Paris, the medical Luther's name was already in the air because of a fight about the weapon salve – a Paracelsian ointment applied to the knife or sword that inflicted a wound. A demon must be at work in such a cure, claimed the Jesuits, whose greater worry was a naturalist challenge from Paracelsians to the scholastic hegemony – new claims for "deep knowledge of nature and its more hidden mysteries," in the words of Paracelsus. On behalf of the Society, Father Jean Roberti denounced Rudolph Göckel (Goclenius), a philosopher at Marburg, for recommending the salve, seizing the occasion to attack the Rosy Cross brothers as well.[7]

When the Parisian authorities quashed a debate on alchemy and atomism in 1624, the publicity that provoked them had attacked "Aristotle, Paracelsus and the whole cabal of ancients." Marin Mersenne saw what was threatened by assaults on venerated doctrines of matter, form, and quality – the immortality of the soul and the reality of the eucharist were at risk, and also the foundations of magic as scholastic philosophers explained them. Professors of theology relied on Aristotle, and so did students of natural magic who, since the time of Avicenna and Aquinas, had also put their arguments in Aristotelian terms. The Philosopher was being challenged on many fronts as the Renaissance neared its end: by ancient Platonists, Epicureans, Stoics, and Sceptics recently resurrected; and by audacious innovators like Paracelsus, Fracastoro, Cardano, Telesio, Patrizi, Bruno, Campanella, Bacon, and Basso.[8]

Sebastian Basso, Nicholas Hill, and Daniel Sennert replaced Aristotelian matter-theory with atomist systems. Their revivals of Epicureanism were eclectic, however – tinged with alchemy, indebted to Neoplatonic ontology, influenced by Stoic conceptions of *spiritus* or obligated to a latent hylemorphism and its apparatus of occult qualities. Official reactions to occultist and other novelties were severe, sometimes murderous: charges of innovating with magic helped kill Bruno and Vanini. Bruno was burned in the year when a visionary shoemaker started to write prophecies that would catch Hegel's eye: "through him … philosophy first appeared in Germany," Hegel would claim. But when the mystical Jacob Boehme died of natural causes in 1624, his pastors begrudged him the last rites.[9]

Around that time, Mersenne was writing *Questions on Genesis*, Naudé was making his name against the Rosicrucians and Gassendi was preparing *Paradoxical Polemics against the Aristotelians*. Robert Fludd had been publishing his vast theosophical volumes since 1617. Campanella's fullest statement about magic appeared in 1620, two years before Franco Burgersdijck's manual on natural philosophy, whose readers would demand twelve more editions. Burgersdijck, Campanella, and Fludd found three ways to accommodate occultism. For students of Burgersdijck and other school philosophers, one way was to repeat the usual scholastic doctrines and accept occultism with them; another was to replace the traditional foundations of magic with new principles also presented as philosophical, which was Campanella's aim; Fludd's was a third way, detaching occultism both from philosophy's Aristotelian past and from its Cartesian future.[10]

2 MAGIC IN LATE SCHOLASTICISM

In their final state, the elements of a scholastic theory of magic – an eclectic theory – are visible in Burgersdijck's widely read writings. He wrote no books about magic but taught its philosophical principles in the manner of late scholasticism, leaving a record of school philosophy in the service of occultism. Near the beginning of a popular textbook, *The Idea of Natural Philosophy* (1622), the Protestant Burgersdijck cites Francisco Suárez, Benito Pereira, and their fellow Jesuits, the Coimbra commentators, to introduce the hylemorphic basics. Like many scholastics before him, he explains that "there are substantial forms of natural bodies [that] do not exist in matter before generation … but are educed from the potency of matter." Another feature of natural bodies, he adds, is

> quality... manifest or occult: the former affects the senses in itself; the latter is perceived only from effects, and sympathies and antipathies are to be referred to it.... The heavens act on lower beings, and do so through motion, light and occult qualities.... In the educing of substantial form, the heavens assist as efficient cause, remote but primary; the proximate and instrumental cause is elementary heat.

Burgersdijck teaches the physics and metaphysics that made astrology and natural magic departments of natural philosophy. His Calvinist students in Leiden learned that nature's most basic process, the generation and corruption of composite bodies, occurs by celestial agency and through occult as well as manifest causes. Burgersdijck's outline summarizes commentaries on Aristotle written by Jesuits at Coimbra in Portugal. Like him, these Catholic scholastics maintained that "because substantial form cannot be an immediate principle of action, nature had to procure some instrument of action for it to use, and this is quality"– including occult qualities. Jesuit soldiers of orthodoxy repudiate "the calumny of recent philosophers who call occult properties an asylum of ignorance.... For not only authorities on medicine but also philosophers are compelled to explain many effects by them, ... nor can effects always be traced ... to the four primary qualities" – hot, cold, wet, and dry. Magical action need not be demonic: "by an artifice of natural magic that joins occult powers of natural causes to one another, many things are done without demonic intervention and excite wonderment because they are seen to be caused beyond the capacity of nature, though in truth they have a physical basis."[11]

Father Suárez, champion of the Counter-Reformation, agrees that some causes and effects are "most occult and must be traced to some power of a higher order, ... a wondrous and occult power ... assisted perhaps by some special and connatural celestial influence." Suárez distinguishes natural magic based on occult qualities from superstitious magic that relies on evil spirits. Although curiosity about magic may lead to superstition and sin, natural magic is not wrong in itself. As Porta had pointed out, magic is just part of natural philosophy if it is limited to "unusual effects that people find amazing because they are rare and have occult causes." Such effects do not "exceed the power of natural causes" since they come from "applying active things to passives with a precise understanding of their powers."[12]

According to Suárez, understanding nature starts with Aristotle, and the Coimbra commentators on the *Physics* give the key concept

of substantial form an Aristotelian pedigree. Although the Philosopher never actually uses the term *eidos ousiôdes*, he lays the groundwork for this principle, enabling Galen and others to link the notion of substance with the notion of occult qualities. Galen wants to explain sickness and health with the manifest qualities of the four elements, but when reliably reported effects – like an amulet's power to heal – cannot be explained in that way, he refers them to "undescribable properties," the 'occult qualities' of medieval medicine and philosophy. Although Galen has empirical reasons for thinking that a peony amulet will relieve epilepsy and that rhubarb is purgative, he cannot fully account for the observed powers of those remedies from their manifest properties. So he derives them from the plant as a whole, claiming that they work "according to the whole substance." From the point of view of scholastic hylemorphism, a thing's whole substance is like its substantial form.[13]

Form and matter join in the hylemorphic union to make a composite substance, this particular member of the peony or rhubarb kind existing of its own. But the colors on the plant's leaves do not exist by themselves, apart from the leaves; they are accidents or accidental forms, which come

Figure 96. Peony.
(Wikimedia from Pearson Scott Foresman)

and go without altering the plant's species or substance. Manifest accidental forms are either primary qualities of the elements (like hot and cold) or secondary and tertiary qualities (like heavy and light, smooth and rough, sweet and sour); such forms are perceptible, while substantial form is not. Just as Galen links 'undescribable properties' with the whole substance, scholastic philosophers make imperceptible substantial form the source of qualities (like peony's anti-epileptic property) called 'occult' or 'hidden.' The qualities themselves are imperceptible, but their effects (relieving epileptic symptoms, for example) are perceptible or 'manifest'.

The senses have direct access to the peony's moisture or dryness, which is to say that the plant's wet and dry qualities are 'manifest.' Those qualities are also intelligible as distinct features of four distinct elements. But the plant's anti-epileptic quality remains occult – as an object of perception. And the same quality is also elusive as an object of analysis insofar as it escapes the scholastic scheme of manifest qualities that belong to the four elements. In that same framework, however, neither perceptual occultness nor analytic difficulty entails unintelligibility: for the perceiver, an occult quality is imperceptible, but for the inquirer it is not unintelligible: the burden of intelligibility shifts from physics to metaphysics – to the principle of substantial form.[14]

If "nothing is in the intellect that is not first in a sense" – heeding the scholastic maxim – a quality that cannot be felt, tasted, smelled, heard, or seen will be imperceptible: it is not available to the mind for the stage of cognizing that makes perceptions. Such a quality is not just 'hidden,' which is what *occultus* means, strictly speaking. The black seeds inside a red apple are hidden in its white flesh as long as the apple stays intact. But the apple's seeds are not imperceptible: they *can* be seen, and also perceived, once the apple has been cut open. Whether occult qualities are hidden or imperceptible or both is a question raised by alchemical traditions debated in the Low Countries when Burgersdijck was teaching – most famously by Joan Baptista Van Helmont, who despised scholastics like Burgersdijck.[15]

Van Helmont, taking many of his ideas from Paracelsus but transforming them, thought that everything in nature is water that has been transmuted chemically – not just changed mechanically – by seeds carried and activated by ferments. A ferment is a body that divides other bodies into their least parts, preparing the divided matter to receive a multitude of distinct lives from a myriad of different seeds, which do the job of individuating and animating. Seeds with those powers have a long pedigree, going back to the 'seminal reasons' of the Stoics and the *semina* of Lucretius.

Medieval alchemists, writing in Arabic and Latin, laid the ground for treating them as *occult*, meaning that seeds are *hidden* deep inside a thing, not found on the outside. In Arabic texts, the relevant oppositions are inside/outside, center/circumference, potency/act but also occult/manifest, appearing in Latin as *occultus* and *manifestus* in works accessible to Van Helmont. Later in the seventeenth century, Van Helmont's doctrine of seeds and their occult powers passed from the American alchemist, George Starkey, to Boyle and Newton – adding another layer of complexity to that polyvalent word 'occult,' as a term of art and abuse.[16]

Meanwhile, rebels like Van Helmont could not silence scholastics like Burgersdijck, who were sometimes panicked by innovation – as in Paris in 1624. Mostly, they kept pushing the boulder of Aristotle's physics up the hill of reason, laboring to explain changes of quality and substance, including the hard cases.

If a pharmacist burns a peony root, the root changes to ash, and some qualities of the new substance, which had been moist and solid in the root, are now dry and powdery. If a new substantial form arrives, where does it come from? Where does the old form of the root go? And what about the water manifestly present in the root but not in the powder? Does the form of the vanished water also have to be accounted for? Debate on those questions was interminable and indecisive. Some traced new substantial forms to the heavens and sought a celestial source for the associated occult qualities. Burgersdijck's is a common formulation of this astrological solution: substantial forms are "educed from the potency of matter" when "the heavens assist as efficient cause." Likewise, according to the Coimbra commentators, "the power of the magnet and certain similar hidden properties of other bodies … arise not from primary qualities but are impressed by heavenly bodies" that act on earthly objects not only by heat and light but also through "other powers called 'influences' that produce other qualities."[17]

3 MAGIC IN A NEW METAPHYSICS

When Burgersdijck died in 1635, Tommaso Campanella finally published the *Seven Books on Medicinals According to Their Own Principles* that he had written long before. In this work and others produced during a quarter-century of imprisonment, the dissident friar faced problems that had driven Burgersdijck and other school philosophers to the 'asylum' of occult properties. For centuries people had been puzzled by real phenomena – the attractive force of the magnet, the stunning effect of the

electric ray, the purgative power of rhubarb – unexplained by elements and manifest qualities. To give new answers, Campanella distinguishes the active and passive "qualities of simple medicines … heat and cold, … wetness and dryness" from the "occult powers of drugs," explaining that the latter

> are not in drugs in a bodily way from the elements … nor from a demon or a star but in the forms and qualities of things, the instruments and vessels of the Primalities.… Objects are composed not only of body and heat reduced to a particular form, nor only of bodily elements, but also of the bodiless – Power, Wisdom and Love. Therefore, actions that give rise to amazement are to be attributed to these causes, … [to] the similarity … of the aforesaid Primalities reduced to a particular level by their embodiment.

Except for the odd term 'Primalities,' Campanella's explanation may seem like the usual scholastic account of magic. Like Burgersdijck, he appeals to "forms and qualities." Yet his theory breaks with tradition in an original effort to reform the philosophy of magic.[18]

Campanella's first book was *Philosophy Proved by the Senses* (1591), a long tirade against the scholastics in defense of Telesio's naturalism. What he takes from Telesio is simple: heat and cold as active principles competing to possess matter as their passive substrate. Rather than try another variation on the usual scholastic themes, he builds a new system on the humble facts of hot and cold bodies, experienced in daily life. Seeing the usual accounts of matter, form and quality as verbal fictions, he denounces them: "the top Peripatetics," he roars, "what emptyheaded buffoons! Prime matter is supposed to be nothing really and privation nothing, and yet form gets drawn from the potency of prime matter, which is nothing and does not exist.… How great is the ignorance of these people." Assailing scholastic metaphysics at its base, he insists that the senses know form directly and that matter is just bodily mass, the body or matter that we touch every day. He equates form with "temperament, … the final state of the mixture … , as when water becomes air, … the final rarity or heat that constitutes it as air is called the 'form' of air." And he describes temperament as the structure of matter – sturdier than the flimsy forms of the schools and a concrete foundation for a new presentation of occult qualities.[19]

Describing his two active forces, Campanella claims that only heat really acts in the heavens:

> Having established this, we say that the force proper to heat concurs in the constitution of a thing, whatever it may be.… Since there are

> so many different stars in the heavens, furnished with much different forces and heats, it happens that each thing has by nature a consimilar constitutive heat, … consimilar, I mean, to the heat of a particular star so that each thing in the universe can have its own star in heaven corresponding to its constitutive heat and leading to procreation and growth, as Hermes, Enoch and Mercurius said: seeing such effects and, not knowing how to investigate their causes, they attributed them to occult influences and the souls of the stars.

The young Campanella accepts astrological causes but does not think of them as occult. Instead, he uses manifest celestial forces, heat and cold, to replace occult powers. Telesio had wanted to free physics from metaphysics, but Campanella was not hostile to metaphysics, as proved by his *Eighteen Books on Universal Philosophy or Metaphysics*, begun as early as 1590 but not published until 1638. There he contends that Telesio relied too much on heat and cold as natural causes of bodies, concluding that these physical powers are instruments of a "diviner cause" that reaches down from God to the Primalities, their Influences and the World-Soul.[20]

Some of Campanella's new theories were in print by 1617. In 1620, he presented the Latin version of his main work about magic, *On Magic and the Sense in Things*, as an "occult philosophy, showing the cosmos to be a living, conscious statue of God" and describing the world's "parts and particles [as] having sensation … enough for their conservation." This pansensism is loosely compatible with Telesio's physics. Once the strife between heat and cold begins, the hot somehow senses the enmity of the cold: otherwise, the impulse of each force to inform all the passive matter would go unchecked; the combat would end, and with it all generation and corruption and all natural action. Campanella's physics turns metaphysical and supernatural only when he connects nature with its triune Creator. He puts the Primalities– Power, Wisdom, and Love – within all things as the ground of their being, thus adding a divine metaphysical wisdom to the physical sense in Telesio's nature.[21]

In his mature works, Campanella uses 'occult' to describe various forces and phenomena, but rather than revert to hylemorphic occultism, he works out a new philosophy of magic. The Primalities and Influences are *in* the nature of things – literally so. The great Influences – Necessity, Fate, and Harmony – correspond to properties of an object arising necessarily from its physical structure; to determinate relations of such properties with those of other objects; and to harmonious effects of such relations on the good of the whole. Flowing from the three Primalities, the three Influences also mirror the triune God, whose ideas they reflect toward

objects with the help of angels. Angels, Ideas, Influences, Primalities, and God are links in the metaphysical chain from which physical objects depend. But the forms of objects – effects of heat and cold acting as physical instruments of those metaphysical agents – are structures as material in Campanella's mature metaphysics as in his youthful defense of Telesio. However, the *Universal Philosophy* admits occult causality excluded in *Philosophy Proved by the Senses*, where an occult quality is just a mistake made by astrologers who misunderstand the physical power of heat.[22]

Campanella distinguishes three types of cause: material, active, and metaphysical. The first requires contact between bodies; the second needs transmission of physical force; the third transcends physics and comes from "the power of the Primalities, which to the physicians seemed occult." The three kinds of causation may mix, and sometimes the Primalities predominate, especially in cases of sympathy and antipathy. The magnet attracts iron rather than other metals "because iron is more like it and connected in its temperament and in the Primality of this attraction, for it is clear that in their similarity active powers and bodily things are signs of conformity of Primalities." A metaphysical similitude of Primalities enhances a likeness that also has a physical basis and manifestation. But the distinction between physics and metaphysics vanishes in the cascade of participations that makes the Primalities always present, even in the lowest order of causality. No cause of a natural effect stands entirely apart either from the physical or from the metaphysical order. As in the production of forms, the Primalities participate in the causation that traditional medicine and philosophy had labeled 'occult.' Even when linked with the Primalities, however, neither forms nor occult qualities are purely metaphysical.[23]

Did Campanella ever accept the qualities that his contemporaries called 'occult'? He certainly rejects the usual hylemorphism. And the main mechanisms of his magic are the world-soul, heat, spirit, similarity, sympathy and antipathy – none of them characterized as 'occult qualities.' In fact, he believes that the Primalities and active forces explain what others called 'occult' in order to evade the task of explanation. But he still examines problems normally treated as 'occult.' His books are heavy with them – the magnet, rhubarb, heliotrope, torpedo, remora, and the lion that fears the cock. Usually he attacks the old puzzles with physical instruments – hot spirits, similitudes, and consensus – that cannot complete the job. In his earliest work, he had treated magical phenomena as misunderstood effects of heat, light, spirit, and other physical causes. And even after formulating a new metaphysics, he seldom admits

Figure 97. Heliotrope.
(Britton and Brown [1913], III, 74)

causes that he is willing to call 'occult.' But when he accepts such causes, he makes them more than physical. They act beyond the capacities of matter, heat, and cold, transcending physical action: their power is metaphysical, from the Primalities. He acknowledges metaphysical causation and sometimes calls it 'occult.' But his brand of occultism is a world apart from the routine allegiance to occult qualities in the philosophy of the schools.[24]

4 MAGIC IN A NEW THEOSOPHY

Worlds even more remote from common experience were Robert Fludd's creations. His enormous *History of Both Worlds* appeared between 1617 and 1626, competing with Campanella's best work on magic. Fludd's studies at Oxford and travels on the continent took an uncommon turn when Paracelsian novelties attracted him. He studied medicine, but his idiosyncratic conception of that art put him at odds with

the London establishment, which recognized the new chemistry but shunned alchemy's grander claims to philosophical and theological insights. Following the lead of Oswald Croll's *Royal Chemistry* (1609), Fludd made himself – with Michael Maier – the main British voice of a universal chemical philosophy. His first works of 1616–17 reply to attacks on the Rosicrucians by another chemist, Andreas Libavius, who had also criticized Croll but from a scholastic point of view. Fludd rejects Aristotelian school philosophy and promotes a Rosicrucian reform of education that will reveal the inner secrets of God and the cosmos. Then he opens his arcana (which are not especially original) in the ponderous but magnificently illustrated *History*, aiming to raise alchemy – seen as God's cosmic experiment – above the material clutter of ferments and alembics. He presents theological chemistry as a new Kabbalah, a key to riddles that the Creator had spoken at the creation.[25]

Like Paracelsus and his followers, Fludd sees alchemy as a mission given by God. And he approaches traditional problems in divinity through an alchemical Kabbalah that is a far cry from the Jewish secrets that Knorr von Rosenroth would unveil to Christians later in the century. Seeing no use in Aristotle, Fludd looks for natural philosophy in the Bible, especially Genesis and John's Gospel. But he reads scripture through the eyes of Hermes Trismegistus, Plato, the Neoplatonists, Ficino, and Francesco Giorgi, honoring the Rosicrucians as the last in a lineage of ancient theologians.

Creation was an alchemical separation of light, darkness, and water. The effects of divine light and spirit still descend through three increasingly material levels of the cosmos – empyrean, ethereal, and elemental – where the Sun is God's seat in the elemental world, the point of equilibrium between dark matter and light spirit, between the willing and nilling (*voluntas* and *noluntas*) of a dyadic deity. God acts in the cosmos through a retinue of ministers: the biblical angel Michael, the kabbalist power Metatron, the World-Soul, the Messiah, Nature and Art, whom Fludd depicts as Nature's ape, chained to her (as she is tied to God) and perched atop the earthy globe. Fludd is extravagant not in originality but in heterodoxy at a time when heretics were burned: his erratic ideas are dualist, pantheist, vitalist, even polytheist, idolatrous, and blasphemous. Yet he does not free himself entirely from the common notions of his day, rejecting Copernican cosmology and staying with tradition on disputes about Galenic medicine.[26]

He was most inventive – and was most perplexing to Johann Kepler – in setting out the harmonies and proportions of the cosmos, his infamous

Figure 98. Fludd's Vision of Nature and Art.
(Fludd [1617–26], I, 5)

pyramids and monochords, not as representations of perceptible, measurable structures but as direct presentations, creative (literally) works of art, aping nature as nature apes God – which to Fludd is a duty higher than mere analysis. "What Kepler expressed in many words and lengthy speech," he contends, "I have explained briefly, in hieroglyphic figures of great significance, not because I am fond of pictures … but in order to unite many things in few and, like the chemists, … to recover the essence extracted while discarding the feculent matter." Fludd's picturing aims to distill meanings. He wants to make sense of natural objects not

by naming qualities (like the scholastics) or calculating quantities (like Kepler and Mersenne) but by weaving a tapestry of symbols that ties the meaning of each partial thing to a cosmic whole bound together by God's perfect meaningfulness. Real knowledge of the cosmos is mythopoeic, knowing the names of God through a mystic alchemy that identifies the metal gold, for example, as a real, non-arbitrary emblem of divine wisdom. Such knowledge comes from God, the Alchemist who marks the universe with cryptic signatures of his work.

Fludd has sometimes been praised for openness to observation and experiment, especially for making scientific instruments. But even his famous weather glass was a symbolic device, meant to mimic rather than explain the cosmic process of contraction and expansion and the primeval enmity between Light and Dark. Kepler accused Fludd of being a theosophist rather than a natural philosopher, and Kepler was right. As a voice in the seventeenth-century debate, his work says more about the future of theosophy than about the past of natural magic. Without regrets for Ficino's philosophy or Campanella's, his spiritualism anticipates the Swedenborgs and Madame Blavatskys. Van Helmont, an heir of the occult philosophy that Fludd abandoned, dismissed him as "a poor physician and a still poorer alchemist, talkative, loud, thinly learned, inconsistent, … a fluctuating Fludd." Gassendi had theological objections: "when Fludd explains his alchemy, he always intrudes on Holy Scripture." Despite Van Helmont's quip, Fludd's stature is evident in the standing of his critics, who included not only Gassendi and Kepler but also Mersenne.[27]

5 SCEPTICISM AND ATOMISM MITIGATED

Marin Mersenne studied with the Jesuits at La Flèche who taught Descartes, and then he entered an order of friars founded by a wonderworker; he ended as chief scribe of the mechanical philosophy. He launched a crusade against occultism before 1620, when he began to assemble a huge Genesis commentary. This enormous book has much to say about biblical exegesis, music theory and the magical arts. Its main targets are "atheists and deists," including Agrippa, Campanella, Fludd, Giorgi, Paracelsus, Pomponazzi, Vanini and other promoters of magic.[28] The casualties of this fight were not just reputations. The gentle Mersenne remarked that Vanini "must have had his head completely filled and choked with smoke …when he supposed that vapors are the cause of ghosts and apparitions.… No wonder … he was killed at Toulouse." Claude Pithoys, a Minim friar like Mersenne, saw things differently,

wondering why "people let themselves be tricked so easily" by superstitions – like those that motivated Vanini's accusers. But such questioning was rare, alien to the zealots and undeveloped in aspiring rationalists like the young Mersenne.[29]

Soon after the Genesis commentary, Mersenne published two apologetic treatises, *The Impiety of the Deists* (1624) and *The Truth of the Sciences* (1625). More readable than the bulky *Questions on Genesis*, these vernacular polemics are hostile to the Italian philosophers of nature, especially Bruno, whom Mersenne sees as a fountainhead of pernicious libertinism and unholy occultism, both of them grave threats to religion. He charges that French free-thinkers had been seduced by Bruno, "an atheist burned in Italy, [who] maintains that all things are, if not animals, at least animated and sharing a life-spirit that he detects in dead roots, ... in precious stones that produce ... rare effects, in necromancers who want to work many miracles." Similar charges against Bruno and every kind of occultism also fill the pages of the *Questions*. But the philosophy behind Mersenne's opposition to magic, provoked by his piety, is clearer in the French polemics.[30]

Mersenne starts with Aristotle, praising him as "an eagle in philosophy" and scorning the "spring chickens" who oppose him. What he values in scholastic Aristotelianism is a stable, orderly philosophy where nature complements a supernature. The scholastics had defined a natural order against which Christ's miracles stand out as extraordinary, whereas the panpsychism of the Italian naturalists obscures the difference between God's miracles and nature's tricks.

The Christian Philosopher in *The Truth of the Sciences* would like a clear distinction between bodily matter and spiritual form. He brands his alchemical interlocutor as "sensual," lauding Aristotle as "an intellectual and rational philosopher ... who has left all the senses behind to penetrate to ... the essence of things, which is invisible and insensible." Yet the same book, recording Mersenne's sceptical voice, doubts the reality of inward forms that are impalpable. *The Impiety of the Deists* registers the same worry, belittling Bruno's world-soul by comparing it to specific forms: there is "no more satisfaction in the one than in the other for [explaining] effects whose cause is hidden within things." Hints of a final break with occultism are just hints, however; if Mersenne rejects the world-soul as incompatible with eucharistic transubstantiation, he also needs substantial forms to account for the sacramental mystery: "one must follow ... philosophers who teach that each individual is composed of matter and substantial form [because] it is more difficult to explain ... our faith" on the alternative principles proposed by Aristotle's critics.[31]

Mersenne's breach with Aristotle was incomplete for a long time, until he learned enough from Descartes, Gassendi, and Galileo to reach the mechanist and anti-occultist conclusions of the *Theological Questions* (1634). Though he had always been uneasy about occult qualities, his early suspicions were immature, no freer of hylemorphism than the older critique that he admired in Thomas Erastus, a sixteenth-century physician whose attack on occultism was unusually vigorous for its time. Mersenne's questions eventually became sharper, however. Recognizing that "one usually calls those powers occult whose effects are perceived without knowing the reason," he demands to know "what occult powers are and where they come from," concluding that the facts hidden behind them are material structures, whether atomic or alchemical. "These qualities are occult only to the ignorant," he concludes, "for the learned ... do not use these terms, showing that what people call 'occult' is plain to them; and if there are qualities that they do not know, they freely admit their ignorance," unlike those who rely on the vacuous vocabulary of sympathies and antipathies "to cover their faults." Those who speak the language of occultism "confess freely that they know nothing.... Sympathy vanishes with ignorance."[32]

The appeal to occult qualities defers basic questions to a region of terminology and ontology beyond the reach of explanation. Mersenne's insight was not new (hence the slogan 'asylum of ignorance' in earlier polemics on occult qualities), yet he reached it not only by joining the long march away from hylemorphism but also by a newer route: a phenomenalist physics absolved of metaphysical obligations, a mitigated scepticism that preserves the new mechanist science as an operational goal while abandoning the ideal of a demonstrative science of nature. Human perception stops at the bark and surface of bodies, which is why the ancients could not produce a better account of qualities. Sceptical epistemology, pragmatic method, and voluntarist theology converge in Mersenne's view that certainty about internal essences is God's prerogative, leaving humans to find useful, contingent information in what their weaker faculties can detect. Since only surfaces and quantities are knowable in this way, occult qualities are worse than invisible; they are fictions unmentionable in scientific discourse, frauds exposed by mitigated scepticism.[33]

Mersenne's *Universal Harmony* (1637) has been called his discourse on method and the first fruit of the new mechanical philosophy. But the author of that book corresponded with Peiresc about the evil eye, the healing power of words and such mainstays of occultist literature as

Lull, Cardano, and the *Picatrix*. He appreciated the cost of his inquiries. "People spend most of their life and labor on curiosities," he writes, "and so they use them less for what they need." Yet curiosity has its value: while doubting that any phenomena are really occult, "a Christian philosopher can … do experiments to disabuse the simple … and destroy fake observations … with true experiments." He estimates that "if one were to examine all that Croll and the other chemists and naturalists have written, … not four out of a hundred claims would be found true."[34]

In theory, Mersenne knew why Montaigne had warned against explaining causes before confirming the facts, but in practice his hunger for good stories was insatiable. He gossiped with Peiresc about

> a monastery … in Aleppo whose monks are good at singing, … and one of them knows music quite well.… Were you … to strike up a friendship with him, we would have the singular pleasure of conferring together about several pretty problems, for they tell me that he … works at chemistry … and even that he knows magic – what kind I know not. In any event, we should see if the Orient produces any better minds than our Occident.

Peiresc knew his friend's limitations. When "poor good Father Mersenne" reports a case of sight penetrating flesh and walls, Peiresc shakes his head, though he pursues the case and prefers Mersenne's credulity to the "incredulity of others who neglect everything and want only to mock." This was the verdict of a learned naturalist whose science had shaken off its metaphysical ills but was not yet cured of aimless curiosity, a fever that also gripped Mersenne.[35]

He traded letters for several years with Christophe de Villiers, a physician who wrote him mainly about the demonic possessions at Loudun in 1634 but also about Nostradamus, Kabbalah, astrology and alchemy, as Van Helmont had written him a few years before about Paracelsus, antipathies, signatures and the "mummy spirit." Whether acquiring Van Helmont's weapon-salve, or testing zoological specimens to check claims about sympathy, or filing a story about "a gentleman … who thickens the air so much that he can walk on it … through a deep understanding of philosophy," Mersenne revels in an empiricism more like Porta's or Bacon's than Harvey's or Galileo's. He was a grandchild of the Renaissance. A Jesuit education prepared him to explore scepticism and admire mathematics but also taught him the magical charms of classicism.[36]

Like Mersenne, Pierre Gassendi learned to dislike the school philosophers and respect the sceptics as a student of the classics. The stultifying

Figure 99. Van Helmont's *Paradoxes*.
(Van Helmont [1649], title-page)

erudition that he acquired was deeper than Mersenne's – better grounded in history and philology – and it also produced better philosophy. Gassendi began his career with an anonymous project to eliminate Aristotelianism once and for all. But he soon put it away and turned to the gigantic task of research on ancient Epicureanism that occupied him for twenty years, leaving less than a decade for the last phase of his work, an original *Syntagma* of logic, physics, and ethics. He wrote smaller treatises on physical and astronomical topics, his logic was well regarded and his atomism was abbreviated and popularized by others. But none of this could equal the fame that came to him as Mister Flesh, author of the fifth set of *Objections* to Descartes's *Meditations*.[37]

Gassendi was also a philosophical critic of magic who went farther than Mersenne in proposing physical and metaphysical alternatives to the magical hylemorphism discredited epistemically by them both. He

and Mersenne were both priests and semi-sceptics who thought that human perception reaches "only to the outer bark, … not to the inward nature." The lesson they took from their philosophical humility is constructive: although man's lust for divine secrets will be thwarted, even a doomed search can compile data in an orderly way. "Nothing can be known from the objects of nature beyond their history," Gassendi writes, deriding "those who supposedly see things from the inside, as if they knew the true and proximate causes of marvelous effects. For me …there is nothing that is not a magnet or a remora." He brings down the curtain on the old metaphysical magic show, ridiculing the scholastic principles of

> matter, form and privation.… Use them, I beg you, to show me the essence of just one object, even the tiniest in nature, and the true root and cause of all the effects and properties seen in it.…What might this matter be, … and what is this form? …What a splendid philosophy! … One word makes everything perfectly clear, once we've learned that everything has matter and form.

Gassendi mocks scholastic occultism, turning objects prized as magical into objects of ridicule. Except where his faith forbids it, he abandons hylemorphism, substituting material structures and mechanical causes for immaterial forms and qualities – including occult qualities. He defines quality as "the mode of arrangement of a substance, a state and condition in which material principles are joined together," and he devotes a large portion of his *Syntagma* to a corpuscularian account of quality. A chapter "on the qualities called occult" judges the magnet, the remora, the electric ray, and other odd phenomena not by ruling them out of court but by forcing them within the jurisdiction of mechanics.[38]

Like Fernel, Gassendi turns the usual distinction between manifest and occult qualities on its head. "There is no faculty or quality that is not occult," he insists, "when one asks its cause and presses the question deeply.… And however much some causes, being not altogether remote, may be brought somewhat nearer, it is still the case that the nearby ones … always escape detection." Having presented his sceptical credentials, he then adds that "nothing acts on an object at a distance, an object not present in itself or through an intermediate or transmitted instrument … that must be corporeal."

Contact occurs invisibly between tiny bodies that our senses are too dull to detect. The common sight of clasps and ropes binding things together or sticks and rods pushing them apart may have its unseen analog

in "miniscule hooks, strings, goads and poles … which, even though invisible and impalpable, are not undescribable." The porosity of most bodies, allowing them to emit and absorb "insensible effluxions," permits the hidden work of the "little tools." By 'effluxion,' 'effluence,' or 'outflow,' Gassendi means nothing mysterious – just that something imperceptible yet material passes from one body to another. Positing unseen structures to explain the properties of amber and similar mystifying objects, he drops other items from the docket of occult problems. Marine currents – not fish as small as remoras – can stop ships. The narcotic ray is a harder case: perhaps it emits corpuscles that dull its victim's *spiritus*. Aware that his explanations are conjectural, Gassendi insists (like Lucretius) only that such microscopic bodies, whatever they look like, however they work, must exist – "some tiny invisible instruments … to do the job of pulling or pushing."[39]

The irreducibles in Gassendi's mechanics, however, are not atoms and the void but two principles in the order of second causes, one material, the other efficient; the latter is also bodily and therefore clearer to the mind than any disembodied agent. "There have been two ways of doing philosophy," says Gassendi, "one dim, the other lucid." In the latter group he puts atomists, Stoics and sceptics, in the former Orpheus, Pythagoras, Plato but also Aristotle, who "expressed himself so obscurely … that he was compared to a cuttlefish … that hides behind its ink, as he hid behind his prose." Because he saw the Philosopher as underwriting the occult philosophy, Gassendi treats him like others whom he blames for magical thinking. He dislikes all fables, riddles, dogmas, and ambiguities, detecting them not only in Italian naturalists who claimed the Platonic heritage but also in their Aristotelian competitors.[40]

They all went wrong by mixing bodies with non-bodies. When Gassendi contrasts their muddlement with the clarity of his own views, he sometimes brushes reports of wonders aside, though sometimes he takes the trouble to show why magic, astrology, and demonology cannot make the tall tales credible. Like Mersenne, he wants to keep nature safe for the supernatural so that "almighty God can use … phenomena to show whatever he likes," while ordinarily letting "nature manage its own processes and preserve its order, once in his great wisdom he has established an order in nature." Fludd is the target of an especially harsh blast at unclarity that Gassendi wrote at Mersenne's request after Fludd had attacked his friend. Fludd's pictorial fancies are like Aristotle's forms, he charges, since they confuse the tangible with the intangible: "Fludd weaves his geometrical lines however he likes, allotting the cube to the

thickest part of matter, the square to the middle sort, the base to the thinnest.... Is there any result he cannot get by pulling and squeezing everything all about just as he wants?" Mersenne is right to "pursue an open and empirical philosophy, while Fludd philosophizes as if he always wants to skulk away, exuding the ink under which to escape the hook."[41]

Since the cuttlefish joke smears Rosicrucians and Aristotelians with the same ink, Mersenne may not have liked it. Gassendi had abandoned Aristotle, but his turn to Epicurus did not eliminate every trace of occultism. Whether his atomism is a substantive science or a sceptic's maneuver, it needs a dynamism that blurs into vitalism. He corrects Epicurus about the atom's motility, which he derives from God's creative act, not from the atom itself. Once created, however, the atom is its own perpetual motion machine; its gravity is "a natural and internal faculty or power whereby to stir and move itself on its own, ... an inherent, innate, inborn and inalienable propensity to motion, an intrinsic impetus and propulsion."[42]

For a similar theory of matter, Gassendi could have gone to the *Paradoxes or Philosopical Treatises on Stones* by Étienne de Clave, an alchemist writing on minerals, whose speculations may have convinced him to put souls into the "seeds" that he found in the poem *On Nature* by Lucretius. Molecular seeds are energized by a "developmental spirit" that enables them to confer odd properties on the things that they produce. These motile molecules that replace astrological causes of generation and corruption are not inert mechanical agents. "The seminal power in an active type of substance is aware of its own effects," Gassendi claims, "as only a spirit can be," for which reason he locates "something analogous to sensation" and "a sort of soul" in the iron that a magnet attracts. If this is pansensism or animism, the *anima* or soul at work is Gassendi's special version. Except in man, it is only a "flowering of matter"– matter's rarest bloom but material nonetheless. Gassendi is uneasy about immaterial entities in natural philosophy, even though his original antagonism to a Platonist world-soul diminishes in the *Syntagma*.[43]

When Father Pierre de Cazrée baited him about his atomist account of magnetism, the Jesuit saved his sharpest jabs for

> those invisible little hooks and grapples.... Magnet and iron rush to a mutual embrace not because they are drawn by these fictive grapples and invisible chains, ... but because they are set in motion ... spontaneously.... Why are you afraid ... for a magnetic quality ... to be *felt* by the iron? ... If generation and corruption are seen as nothing more than the

> local motions … of atoms … , it's all over for substantial forms.… What will become of the sacred mysteries of our religion?

Gassendi claims not to understand what it means for a magnet and a piece of iron to join "spontaneously." The automatic character of the phenomenon is the problem, not a solution; spontaneous action is "an unworkmanlike answer that we use for everything whose causes we don't know." Gassendi defends his invisible hooks and grapples as "various levels of instrumental cause," whose exploration is the task of physics. Enticed by the prospect of microscopy, he wants to improve natural philosophy by pursuing analogies that reach from the visible world to the invisible. But he invents souls and spirits, not just grapples and hooks, eroding the concreteness that makes his metaphors clear. His physics has been called "the mechanics of joiners or carpenters" because it simply transports the shapes of simple tools to the atomic level. The artifice is crude and no improvement empirically on the physics of qualities, yet it was enough to disassemble the foundations of the occult philosophy.[44]

6 BAD DOCTRINES

In 1637, Descartes declared himself in public with a sketch of the project that would expel magic from the new philosophy – though the "bad doctrines" of occultism are not at all the main issue in the *Discourse on the Method*. Thinking along similar lines, Galileo had already rejected the physics of qualities in the *Assayer* (1623), thus depriving magic of its philosophical framework, and in physics his new concept of inertial motion would chase some of the ghosts from nature's machine. Unlike Galileo, Descartes had distinctly philosophical ambitions – in the modern sense of 'philosophy,' whose old house he planned to rebuild.

He left the ruined castle of scholasticism for a palace of his own making – stairways of reason rising from a basement of method and metaphysics to a penthouse of morals, mechanics and medicine. The architecture of erudition and rhetoric – Naudé's blueprint for a sceptical history – was no part of the new design. In order to build a proper house for philosophy, Descartes turned away from the old monuments of learning, ignoring the Renaissance of history and philology. Naudé, Gassendi, and Mersenne all despised occultism – like Descartes – but they cloaked their contempt in erudition. Among the ruins restored by classicism were ancient signposts to magic, astrology, divination, and demonology. Like other revered ghosts in this landscape, Plato, Pliny, and Plotinus told the

tales that Naudé doubted but amplified by repeating them. The old sages haunted history's terrain, but Descartes looked elsewhere.[45]

As he turned his back on occultism, Descartes abandoned its authorities, modern as well as ancient. Just from its title, he knew he could skip Jacques Gaffarel's *Curiosities Unheard-of on Persian Talismanic Carving, the Horoscope of the Patriarchs and Reading the Stars*: "it must be nothing but illusions," he told Mersenne. But he looked inside Athanasius Kircher's *Magnetic Art* before calling the learned Jesuit "more charlatan than scholar." He admitted – fifteen years after the event – that he had read Campanella's *De sensu*, finding "little solidity" in it. Mersenne recommended books by Campanella printed after Naudé and his friends had brought the troublesome friar to Paris. But Descartes declined to read them. By then there was no room in his philosophical dreams for a visionary like Campanella.[46]

The younger Descartes had not yet blocked every path to the occult philosophy. In the pansophic spirit of his age, he glanced at books by Ramon Lull before warning Isaac Beeckman away from them. Traveling in Holland and Germany, he heard about the Rosicrucians and wanted to meet one, but the young man's impulse meant little to the mature philosopher – though the décor of his famous dreams of November 1619 may have been Rosicrucian, or may have been many other things. A notebook of that period treats the brethren as fakes who promise "to produce wondrous novelties in all the sciences." On the next anniversary of his dreams, Descartes left an ambitious note of his own: "I have begun to understand the basis of a wondrous discovery." Then he adds a few remarks that sound more like Campanella than Beeckman: "The active force in things is one: love, charity, harmony" and "every corporeal form acts through harmony." The rest of the manuscript is mainly geometry, algebra, and mechanics.[47]

The *Discourse* records his passage through the apartments of knowledge, "even those full of superstition and falsehood, in order to know their true value and guard against being deceived by them." His list is like the catalog of disappointed learning that troubles Marlowe's Faustus. But when Descartes abandoned the traditional curriculum, the results were different. He never trusted "the false sciences, [knowing] their worth well enough not … to be deceived by the promises of an alchemist, … the predictions of an astrologer [or] the tricks of a magician." Some phenomena seen as magical – magnetism, birthmarks, optical illusions – held his attention, but his published work generally ignores

the old stories about occult powers. When these topics come up in his letters, his comments are usually replies to questions from Mersenne.

Still, his theory of particulate matter includes vapors and spirits that link the new mechanist physics with the Stoic *pneuma* and hence also with Ficino's spiritual magic as well as Newton's aethers. Unlike Ficino, Descartes was not a physician, but he was curious about medicine and sometimes treats the psychology of healing as if it were not just mechanical: telling Princess Elisabeth that inward joy has a secret power to bring good luck, he alludes to the demon of Socrates. But the remark is out of character – frivolous, perhaps. When Mersenne sneers at alchemy, Descartes smirks with him, adding that "for a decent person such illusions aren't worth a moment's thought." As for astrology, "it makes people die who without it might not have been sick. Of astrology, chiromancy and other such nonsense … I can have no good opinion."[48]

Writing his *Rules for Directing the Mind*, he sees the occult sciences as arsenals of bad method. It puzzles him that "so many people should investigate … the virtues of plants, the motions of the stars, the transmutations of metals … while hardly anyone gives a thought to good sense." His fifth rule highlights the proper order of inquiry with the contrary example of astrology, which treats "difficult problems in a very disorderly manner. [Astrologers] do not … make any accurate observations of celestial motions, yet they expect to be able to delineate the effects of these motions." The eighth rule calls it "foolish … to argue about the secrets of nature, the influence of the heavens on these lower regions, the prediction of future events … without ever asking if human reason is adequate for discovering matters such as these." Rule nine, like Gassendi's remarks on the flea, claims that for a clear and distinct intuition of truth one must "concentrate … upon the most insignificant and easiest of matters" – a precept confirmed by familiar examples:

> The sciences, however abstruse (*occultae*), are to be deduced only from matters that are easy and highly accessible, and not from those that are grand and obscure.… To inquire whether a natural power can travel instantaneously to a distant place, … I shall not immediately turn my attention to magnetic force, or the influence of the stars.… I shall instead reflect upon the local motions of bodies … that are easy to perceive.… I shall not have recourse to the remedies of the physicians, … nor shall I prattle on about the Moon's warming things by its light and cooling them by means of some occult quality. Rather, I shall observe a pair of scales … and similar examples.

In contrast to the clear speech needed for proper inquiry, the language of the scholastics includes "magic words that have a hidden meaning (*vis occulta*) beyond the grasp of the human mind." "In the vast majority of issues about which the learned dispute," according to rule thirteen, "the problem is … one of words." Descartes applies the same principle to rebuke chemists for speaking "in terms outside common usage as a pretense of knowing what they do not know." The danger is that "those who brag of having secrets – in chemistry or judicial astrology, for example – never fail … to find some curious folk to buy their swindles at high cost." Descartes wants to eliminate everything esoteric, obscure, or vacuous from his new philosophy, whose clear and distinct ideas will end the reign of occultism.[49]

The same high standard of clarity that rules his own thinking will regulate divine conduct as well. An undeceiving deity works only clear and distinct wonders: "why would God do a miracle unless he wanted it known as a miracle?" Descartes steers clear of the miraculous when he can, either by openly refusing the question or by fencing it in with method, as in the "new world" imagined by *Le Monde*, where "God will never perform any miracle … , and the intelligences … will not disrupt … the ordinary course of nature."[50]

The world where Descartes lived was a messier place and a nursery of wonderment, as he learned in a feud with Gijsbert Voët that began in 1639. Magic, occult qualities, and substantial forms are threads in the fabric of this tedious dispute. Voët links Cartesian thought with atomism and scepticism, denouncing it as incompatible with scripture and condemning it for rejecting Christian doctrine on the soul, the incarnation, demonic possession, and miracles. After sorting out his theological hesitations, Descartes calls Voët wrongheaded for condoning occult qualities and forms as a "learned ignorance" that restrains the pansophic lust to reduce everything to geometry and mechanics. "Obviously, one can account for no natural action through these substantial forms," he replies, "since their proponents admit that they are occult and do not understand them.… From the mere fact that *they* do not know the nature of some quality, they conclude that it is occult or inscrutable for all mankind."[51]

These "scholastic wars" sputtered on for years, as Voët vented his rage by calling Descartes a crypto-atheist and implicating him with Vanini, the Jesuits, Paracelsians, and Rosicrucians. One slander that stunned Descartes was Voët's charge that algebraic geometry is a kind of magic. Attacking his attacker, Descartes could "only ask whether he rightly understands this philosophy that he condemns, a man so stupid … that he wishes to

bring it under suspicion of magic because it has to do with shapes." If Voët is right, then "a key, a sword, a wheel and all other objects whose effects depend on shape are …tools of magic."[52]

The rejoinder misses, or evades, a likely point of Voët's accusation, ignoring its roots in the long-running controversy about the magic of shapes carved on natural objects – the images on talismans. Citing normative doctrines of philosophy, eminent thinkers had debated this question for centuries, keeping the issue alive so that Fludd could still taunt Mersenne with it. Voët, fearing for the stability of Christian education, sees the quantitative mechanics promoted by Descartes as eroding the qualitative physics of the schools, and he cunningly links the decay to a curriculum corrupted by magic:

> When they attribute efficacy and movement to quantity and shape, which are normally attributed to forms and their active qualities, we must realize that as a consequence the young may sometimes unwisely accept that magical axiom hitherto rejected by all Christian theology and philosophy: that there is some efficacy in quantity and figure, which in itself or along with other things behaves as an active principle of change.

This was the metaphysical and the professional fuel for a conservative Christian's fear of the new mathematics as an arrogant omnicompetent Kabbalah. Professor Voët takes offense because Descartes thinks that algebra produces "not only an encyclopedia and compendium of human wisdom, but also a kind of cornucopia in which all the treasures of every possible science and discipline lie hidden."[53]

Much of Descartes's fight with the scholastics, whom he wished not to attack frontally, was about substantial forms. His famous arguments against forms also undermine traditional notions of soul and mind, key issues for the occult philosophy because animism and vitalism are ways of accounting for magical effects. To purge the mind of separable forms, Descartes proposes a contact model of sensation without phantasms, the ineffable entities deployed by the scholastics at the "mysterious limit" between mind and its bodily objects. Separable forms and real accidents are "aligned with substance like little souls in bodies," blurring the distinction between body and mind. Treating modes of matter as really separable makes them substances, confusing "the power whereby the soul acts on the body with that whereby one body acts on another." To resolve the confusion, however, Descartes had to move beyond *res cogitans* and *res extensa* to the union of mind and body in the human composite, where soul is "the only substantial form."[54]

Giving the human soul this unique status exposes the inverse error of treating natural objects as hylemorphic composites and shows how the physics of qualities breeds a magical animism when people project inner experience of the body/soul junction on to bodies in the world outside. Descartes diagnoses hylemorphism as a psychosomatic disease:

> Although I called gravity a 'quality,'... I thought it was a substance.... I still did not attribute to it the extension ... of a body and saw that the gravity, while remaining coextensive with the heavy body, could exercise all its force in any one part ... , exactly the way in which I now understand the mind to be coextensive with the body.... What makes it especially clear that my idea of gravity was taken largely from the idea I had of the mind is the fact that I thought that gravity carried bodies towards the center of the earth as if it had some knowledge of the center.

Descartes shows how easy it is to slip souls and even minds into bodies under the guise of qualities and forms, thus scouting the terrain that Leibniz would occupy when he attacked Newton for injecting forces into bodies "like little demons or imps."[55]

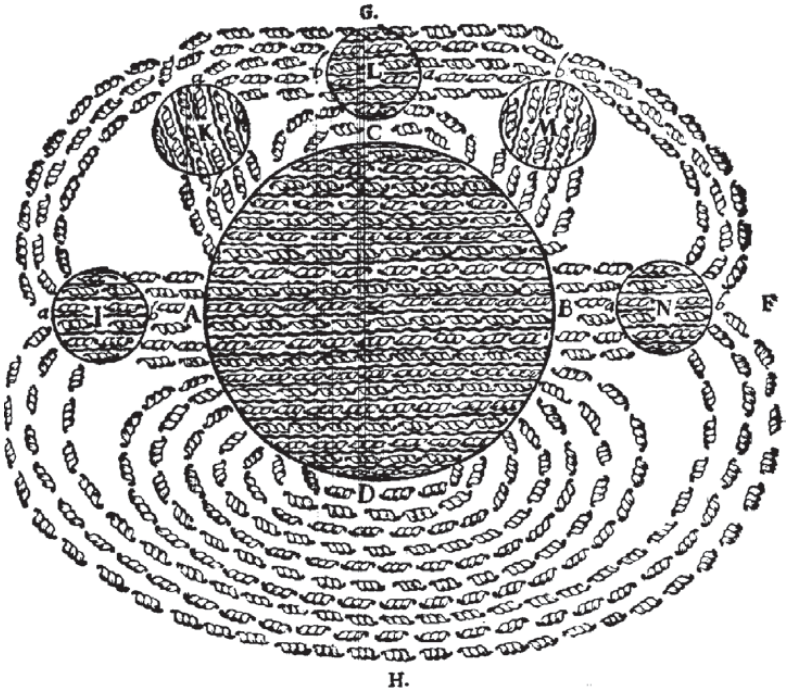
His own species aside, Descartes wants a world cleanly divided between minds and bodies, with no room for hylemorphic hybrids and their magical qualities. He once considered compiling a natural history of qualities – like Bacon's – but decided that it was "these qualities themselves that need explanation." Qualities are not things but modes of things or mental responses to them. Renouncing the physics of qualities, a corrected mechanics will solve cases as hard as magnetism and heat. After the long account of the magnet in the *Principia*, Descartes adds that "shape, size, position and motion" cover "all the other remarkable effects ... usually attributed to occult qualities," concluding that "there are no powers ... so mysterious, and no marvels attributed to sympathetic and antipathetic influences ... so astonishing that they cannot be explained in this way." Matter in motion accounts for all those "rare and marvelous effects" – amber's attractive power, feats of imagination and telepathy, even a murdered corpse that bleeds when the killer comes near. Mersenne had written reams against occult qualities. Gassendi and others enlarged the pile of words. Descartes closes the question with a snub: magic is no longer a respectable topic – "for a decent person not worth a moment's thought."[56]

New ways of visualizing nature, assisted by new arts of picturing, were reducing magic to a spectacle, a stage illusion, ready for Molière's

hilarious disclosure of its emptiness in the play that gave the history of science its best joke. When the *Imaginary Invalid* shattered the pretense of occult qualities, the laughter made magic ridiculous, marking a shift in standards of intelligibility. A theme of the play is false learning – the pose struck by the pretentious healer who "binds himself blindly to the opinions of the ancients." As his hypochondriac patient catalogs the medicines prescribed for him, he makes a list of occult powers: "a little enema, insinuative, preparative and emollient, … a hepatic julep, soporific and somniferous, … a nice purgative … to flush out and evacuate the bile."[57]

The traditional philosophy and medicine ridiculed by Molière had treated qualities of things as entities distinct from and unlike the things themselves. But the mechanical philosophers visualized qualities as bodily structures of the very same kind, though the structures are invisible. Since they could not actually see what they pictured, they posited invisible microstructures, depicting them in visual metaphors based on artificial macroscopic objects – balls, canes, keys, screws, locks, clocks – that blur the line between nature and art yet serve to demystify qualities that had been mysterious. To describe what they could not sense, the innovators postulated features by analogy between the seen and the unseen. Anything not visualizable in that way could be dismissed as 'occult,' which – for those who abandoned the physics of quality – would come to mean not so much 'hidden' as 'unintelligible.'[58]

By 1600, the long debate about qualities was at an impasse that Descartes and Galileo broke through by discarding the traditional metaphysics along with one of its basic preferences, for qualities (hot, cold, wet, and dry) that are *haptic* rather than visual, *felt* rather than seen. Trying to cover the whole world – from remote stars to minuscule corpuscles – with the same physics and geometry, Descartes pictorializes its tiniest parts, after Galileo had published pictures of moons circling Jupiter that were hidden to the naked eye. To show that all of nature's works are effects of the same material causes – the shape, size, position, and motion of its smallest parts – Descartes depicts invisible micro-objects as they might appear in the macro-world: grooved particles, for example, solve the puzzle of magnetism by screwing their way mechanically through the earth. Explanatory pictures clarify mechanical arguments made by Descartes that would otherwise be harder to grasp. The language of vision (ideas are clear and distinct; a natural light illuminates understanding) pervades Cartesian philosophy. Images make it plausible to talk about invisible mechanisms working beneath visible phenomena – including effects commonly treated as magical, such as magnetism, sympathies, and



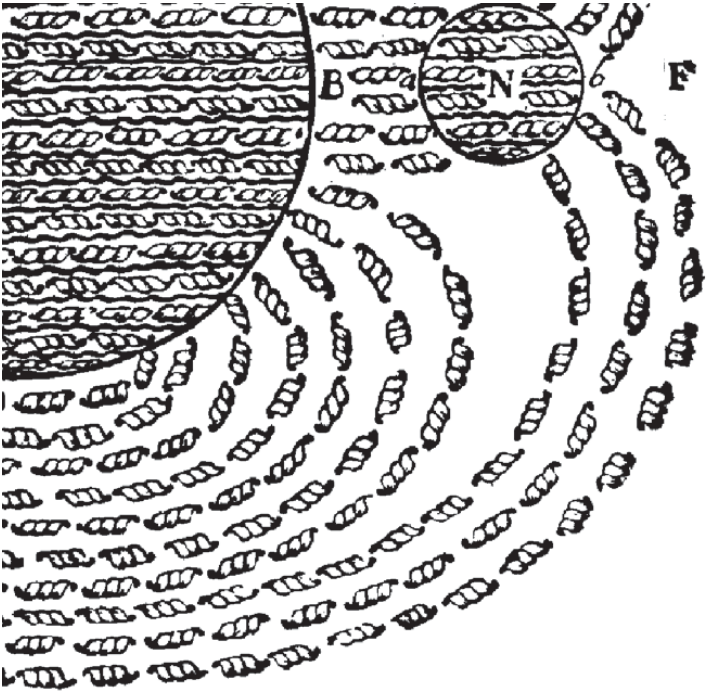


Figure 100. Magnetic Particles.
(Descartes [1644], p. 271)

antipathies. While knowing is like seeing for Descartes the geometer, earlier investigators, like Fernel the healer, thought that bodies are sensed primarily by feeling them. Fernel's medical and physical primitives are not shape, size, position, and motion but fire, air, water, and earth – felt but not seen as hot, cold, wet, and dry.[59]

Using pictures to show what words say and numbers measure, new theories displaced the old physics, also displacing the old 'hidden' qualities, rooted in intuitions that were more haptic than visual: the exchange was more like burying than cloaking, not just putting occult qualities out of sight but also making them untouchable. The picturing that had served magic so well in the sixteenth century was now turned against it by mechanical philosophers who made images of what they could not see but had to assert – the microscopic particles and mechanisms that explain macroscopic phenomena. Although magical objects and their sensible effects could be observed, the occult or hidden causes of those effects eluded every type of observation. To account for the effects – certified by common experience – proponents of the mechanical philosophy visualized invisible mechanisms and published pictures of them. The art and technology of picturing worked both for and against magic in post-medieval Europe, at first enhancing the concreteness of magical objects but eventually eroding their theoretical foundations.[60]

7 FACTS AND REASONS

The credulous virtuoso Kenelm Digby and the methodical mechanist Thomas Hobbes were among the first English thinkers influenced by Descartes. Both were in France in the mid-1630s, and both sympathized with recent innovations by French philosophers. Digby's *Two Treatises* appeared in Paris in 1644. He had already announced one of the book's purposes in *Observations upon Religio Medici*, hastily written after he read Thomas Browne's famous book before it was printed. He agrees with Browne that "there are not impossibilities enough in religion for an active faith," yet to establish the soul's immortality, he plans "a totall survey of the whole science of bodyes." He will "shew … all the motions of nature, and unto them … fit intelligibly the termes used by her secretaries, whereby all wilde fantasticke qualities and moods (introduced for refuges of ignorance) are banished."

Browne permits too much to astrologers, diviners, and magicians, according to Digby, who still has his own reasons for believing in ghosts. "Neither do I deny there are witches," he adds: "I only reserve my assent

till I meete with stronger motives." The comment foreshadows the remarkable interest in goblins and ghosts among English philosophers and theologians for the rest of the century. Conceding to Browne that his medical experience "hath the advantage of my philosophy in knowing there are witches," Digby nonetheless denies any "temptation to doubt of the deity nor … spirits. I do not see such a necessary conjunction betweene them." But the tie binding theism to spiritualism and sorcery would lead Henry More and others to conclusions unlike Digby's.[61]

The first of the *Two Treatises* is a study of body as a prelude to understanding the soul, and "a body is a body by quantity." Quantity is divisibility and divisibility is local motion, so that "all operations among bodies are either locall motion or such as follow out of locall motion in the least sort of natural bodies." Victims of Digby's mechanism – despite professions of loyalty to Aristotle – are the "useless cobwebbes and prodigious chymeras" of scholastic philosophy, particularly qualities understood as "reall entities … distinct from the bodies they accompany." Gravity and levity are not things but modes of things. No matter how puzzling the effect of heat or light or magnetism, "no body can worke upon another remote from it, without working first upon the body that lyeth between." This usually happens "by the emission of little partes out of one body into another … passing through the interjacent bodies which … furnish them, as it were, with channels and pipes." Such emissions "may yield a reason for those magicall operations which some attribute to the Divels assistance." Fearing that it would "in a manner renounce all humane fayth," Digby hesitates to reject all the testimony for magical effects. Instead, he will "make these operations of nature not incredible" by explaining them mechanically.[62]

His main example of a reputedly occult phenomenon reducible to "down right material qualities" is the powder of sympathy, a relative of the weapon salve publicized by Fludd and others before him. In 1658 Digby produced the original French version of his book on the famous cure, followed by twenty-nine more editions in five languages. Expanding his description of the powder in the *Two Treatises*, he tells how he learned about it thirty years before from a monk returned from Asia; how witnesses as trustworthy as King James and Chancellor Bacon certified its power; how the secret eventually leaked and spread; and how its ingredients can be obtained and compounded. Since experience shows that the powder, mixed with blood from a wound, can promote healing even when not in contact with the wounded patient, Digby reasons that "light transporting the atomes of the vitriol [in the powder] and of the blood,

and dilating them to a great extent in the aire, the wound … doth attract them, and thereby is immediately solac'd, … healed by the spirits of the vitriol, which is of a balsamicall virtue." He prefers invisible particles to the usual "effect of charme or magick," calling it "a poor kind of pusillanimity and faintnesse of heart, or rather a grosse ignorance … to confine all the actions of nature to the grossenesse of our senses."[63]

Although he looked beyond sense data to unseen mechanisms, Digby was an experimentalist and friendlier than Thomas Hobbes to the pragmatic, collective empiricism promoted by Bacon and institutionalized by the Royal Society of Boyle's day. Hobbes – more like Descartes than Bacon – trusted method and reason more than experience. He aimed at a systematic philosophy, and he attempted a metaphysics, but from his early writings through *Leviathan* (1651) and *On Body* (1655), what preoccupied him was motion and its relation to sensation. Ruling out action at a distance and reducing the world to bodies in motion, Hobbes could have based his mechanics on transmitted emissions like Digby's; instead, like Descartes, he focused on the media through which bodies interact – perhaps because emissions seemed like the species applied by Aristotelians to magnetism and other hard cases.

The early *Little Treatise* now securely attributed to Hobbes treats such species as vehicles of sympathetic "conveniency and disconveniency by which the agents … attrude and repell." A key to Hobbes's views on transmission through a medium is the notion of *conatus* (striving), the infinitesimal motion of unobservable bodies that accounts even for human psychology in mechanical terms. A less delicate but still difficult problem was iron moving toward a magnet without contact, seeming to contradict the principle that "whatsoever is moved, is moved by some contiguous and moved body." Hobbes reasons that

> the first endeavour which iron hath towards the loadstone is caused by the motion of that air … contiguous to the iron … generated by the motion of the next air, and so on … till … we find … some motion … in the loadstone itself, which motion … is invisible. It is therefore certain that the attractive power of the loadstone is nothing else but some motion of the smallest particles thereof.…As for those that say anything may be moved … by itself, by species, … by substantial forms, … by antipathy, sympathy, occult quality and other empty words of schoolmen, their saying so is to no purpose.

Hobbes uncovers the scholastic subterfuge: "they put for cause of natural events their own ignorance … disguised in other words, … as when they

Figure 101. The Sacrament of the Altar Transubstantiated, 1475–1500. (Anon., British Museum 1845, 0809.197)

attribute many effects to occult qualities; that is, qualities not known to them."[64]

He wants to cure philosophy of abstraction, even imagining a language with no verb 'to be' and wondering what would become of words like 'essence.' He sees metaphysical trouble in such vacuities and hopes that talk about 'separated essences' will no longer terrify people and

> fright them from obeying the laws of their country with empty names.... For it is upon this ground that when a man is dead and buried, they say his soul ... can walk separated from his body.... Upon the same ground they say that the figure and colour and taste of a piece of bread has a being there, where they say there is no bread. And upon the same ground ... a great many other ... errors [are] brought into the Church from the entities and essences of Aristotle.

From scholastic abuse of the copula Hobbes derives such seditious errors as fear of ghosts and adoration of the host.[65]

Behind his original critique of language is a riskier metaphysics. Identifying substance with body obliges him to claim that the term 'spirit,' even as used in Scripture, can refer only to something embodied – however lightly embodied – or else to a mistake of perception. If angels and demons exist, they must have "subtle bodies, … endued with dimensions" since he can find no biblical evidence for their incorporeality. Hobbes also reinterprets the stories of Moses and the Egyptian wizards, venerable proof-texts for magic. Arguing that words can affect only those who understand them by signifying passions or intentions and causing emotions, he concludes that "arts of magic and incantation" in the Bible must have been ordinary verbal suggestions or conscious deceptions. The alternative is to give some different meaning to the biblical text, "and yet there is no place of Scripture that telleth us what an enchantment is." As for contemporary belief in magic, Hobbes claims to know no one who "ever saw any such wonderous work … that a man endued but with a mediocrity of reason would think supernatural."[66]

Partly a response to Campanella, Bruno, and other Italian naturalists, Hobbes's hostility to occultism is thorough and clear. But its placement in a sweeping attack on religion made his rejection of magic and traditional demonology less useful to contemporaries than it might have been had he stated it less provocatively. Like Lucretius, he traces the religious instinct to fear and ignorance, especially to confusions about souls, dreams, and visual images. By setting these outrageous views alongside less radical criticisms of "the opinion that rude people have of fairies, ghosts and goblins, and of the power of witches," he tied the failing cause of occultism to the future of a religion that for most Europeans was still no illusion.[67]

8 SEEING GHOSTS

That some thinkers linked a rational Christianity with residues of the occultist tradition is evident in the group of English philosophers known as the Cambridge Platonists – especially Henry More. As a young man, More sought refuge from determinism and scepticism in various millenarian, Arminian, and Platonist beliefs. Even after he found certainty in "the Spirit Divine," he remained tolerant, eclectic, and always suspicious of "enthusiasm," the false sense of inspiration that he disliked in Thomas Vaughan – the alchemist known as Eugenius (not Eirenaeus) Philalethes. Vaughan dedicated his *Theomagical Anthroposophy* (1650) to the Rosicrucians, pledging allegiance to the occultists of the last century

and stating his hatred of Aristotle. More answered Vaughan, launching an exchange of polemics in which More contended that religion based on enthusiasm decays too easily into atheism. In *Enthusiasm Vanquished*, he attributes the "misconceit of being inspired" to a diseased imagination that he detects in "many of our chymists and several theosophists."[68]

Hostility to occultism may seem out of place in the Cambridge that rediscovered Ficino, but it was in keeping with More's initial zeal for the way of thinking whose English name he coined – the Cartesian philosophy. His early reaction to the new method was not uncritical, however: while insisting that some phenomena have no mechanical explanation and must be effects of a spiritual agency, he welcomed Descartes as a non-Aristotelian supporter of theism and the soul's immortality. Around 1660 More's project became overtly theological, though his deepest motives had always been religious – obviously so in two early works, *An Antidote against Atheism* and *Kabbalist Conjectures*. The *Antidote*, blaming Descartes for the atheism in the mechanical philosophy, expresses the spiritual panic provoked by Hobbes. But the *Conjectures* views Cartesian physics positively as the latest version of a sacred tradition (or Kabbalah) of atomism first disclosed to Moses.[69]

More took only what he needed from Descartes, as one can see from polemical remarks about Vaughan in *The Second Lash of Alazonomastix*:

> Divine Spirit and Life … is worth not only all the Magick that thou Pretendest to, but … Des-Cartes Philosophy to boot, … a fine, neat, subtil thing [that] bears no greater Proportion to that Principle … than the dry Bones of a Snake … to the Royal Clothing of Solomon. But other Natural Philosophies … are even less.

More's dislike of Descartes grew with time. When he learned more about Kabbalah from Knorr von Rosenroth and tried to apply it to his theory of divinized space, he crowned Descartes "Prince of the Nullibists" who deny God any place at all in the cosmos.[70]

More first mentioned "Cartesianism" in an attack on Descartes for his "mechanical surmises." He saw him as hoping, like Gassendi, to make the material world autonomous – a calamity that would enlarge the "very hideous chasme or gaping breach in the order of things" opened by the naturalist Aristotelians. More and the Cambridge Platonists filled the gap with a soul housed not only in the body but also in aerial and aetherial intermediaries or "vehicles" thought to join matter with spirit magically. The bodiless Creator also acts on the embodied creation through a medium, a spirit of nature or hylarchic principle, "a substance

incorporeal, but without sense and animadversion, pervading the whole matter of the universe, and exercising a plastical power therein, … raising such phaenomena in the world … as cannot be resolved into mere mechanical powers."[71]

More applies this spirit of nature to long-standing problems like "the phaenomenon of gravity, wherein … both [Descartes] and Mr. Hobbs are quite out of the story." Recalling that Plotinus called nature "the grand magus," More claims that "the unity of the soul of the universe and … the continuity of subtile matter" account for "not onely the sympathy of parts in one particular subject, but of different and distant subjects, … such as is betwixt the party wounded and the knife … besmeared with the weapon-salve, … which certainly is not purely mechanical but magical." Citing Digby on the powder of sympathy, he denies that "any agency of emissary atoms" can explain the reported cures.[72]

That More sees failures of mechanics in the topics of gravity and sympathy – and that he considers these problems cognate – shows his dependence on Neoplatonism and his distance from Descartes. He puts Cartesian specialties like the ontological argument and innate ideas in strange company. To prove God's existence to the atheists, he tells stories about ghosts, witches, demoniacs, apparitions, even the Pied Piper of Hamelin – anything to corroborate

> such effects discovered in the world as are not deemed natural, but extraordinary and miraculous [and] cannot be resolved into any natural causes, … but are so miraculous that they do imply the presence of some free subtile understanding Essence distinct from the brute matter and ordinary power of nature.

More filled his works with such stories, gathered not only from the demonographers whom Naudé ridiculed but also from his own experience and from contemporary witnesses. Like Naudé, he devises criteria to sort fact from fable – rules of evidence and testimony – and he applies them in case after case. He proves to himself the "unexceptionable truth and authentickness" of reports of a haunted house in Burgundy from "the observation … not by one solitary person, but by many together, nor by a person of suspected integrity, but of singular gravity, … the experience not made once or twice, but … every day for a quarter of a year."[73]

More's inquest was not undiscriminating. While authenticating ghost stories as proofs of a spiritual God, he devalues astrology for related reasons: he complains that attempts to trace extraordinary effects to physical causes in the heavens are evasions "of the truth … concerning

apparitions," dodges by materialist Aristotelians. Spiritualist researches made his theological convictions invincible: "I am as well assured in my own judgement of the existence of spirits," he maintains, "as that I have met with men in Westminster Hall or seen beasts in Smithfield."[74]

The certainty that More found in haunted houses was not new or eccentric in England. John Dee had transcribed talks with angels in the previous century, and in More's day the hunt for spirits interested not only Ralph Cudworth and the Cambridge Platonists but also Robert Boyle of the Royal Society. One avid hunter of poltergeists was the sceptical Joseph Glanvill, author not only of *The Vanity of Dogmatizing* but also of *Light from the East*; *Some Philosophical Considerations Touching Witches and Witchcraft*; and *Plus Ultra, or the Progress and Advancement of Knowledge since the Days of Aristotle* – a remarkable quartet composed in the 1660s, while plague and fire ravaged London.[75]

Plus Ultra defends the Royal Society and the new science, attacked by Thomas White when he was angered by Glanvill's dismissal of tradition in *The Vanity of Dogmatizing*. Answering *Plus Ultra*, Meric Casaubon accuses Glanvill of speaking "the common language of all extravagant chymists.... Professing Christianity, [they] would raise admiration by broaching unheard of mysteries." Seeing proofs of spirits everywhere, Casaubon links Glanvill with Fludd because both close the book on Aristotle when they open the Bible. To conservatives like Casaubon, Glanvill's sin is enthusiasm, a very adaptable slur. He sees Glanvill and other prophets of the new learning as elitist mystics and faithless materialists who desert the old schools for "an universitie consisting of chimists, Behemists and enthusiasts." But Glanvill sees himself as resisting enthusiasm, struggling to resolve dogmatic passions in a rational and empirical way. He finds the old certainties powerless against Hobbes's profane novelties, but he believes that a program of experiment aimed at probable truth and tempered by suspension of judgment can reveal enough about matter to secure the dominion of spirit. Since nature is the province of second causes, spirits that show themselves in this world must be diabolical, not divine: so Glanvill urges the Royal Society to back a research project on witches, the Devil's agents.[76]

Glanvill wanted to establish the facts about witches and ghosts with case histories and testimony. He began his spiritual sleuthing in 1663 with a notorious poltergeist – the drumming demon of Tedworth. He inspected the afflicted house, heard the famous knocking, spoke with the spirit and wrote an account of it still read in the next century. Assisted by More, Boyle and others, he compiled the data for *Sadducism Vanquished*, a

Figure 102. The Drumming Demon of Tedworth.
(Glanvill [1700], frontispiece)

posthumous work edited by More, who saw Glanvill as an ally in defending the immortality of the soul. Answering critics who wanted to replace supernatural causes with natural mechanisms, Glanvill applied the tools of mitigated scepticism: reporting the data and admitting ignorance of causes, he turned the phenomenalism of Mersenne and Gassendi to purposes they would have found strange.[77]

His scepticism is partly biblical: Adam's sin had epistemic as well as moral consequences. Before the Fall, his "sight could inform him whether the loadstone doth attract by atomical effluviums.... The mysterious influence of the moon ... was no question in his philosophy, no more than a clocks motion is in ours.... Sympathies and antipathies were ... no occult qualities." But in postlapsarian times, scholastic philosophy has made fallen humanity "conclude many things within the list of impossibilities which yet are easie feasables, ... leaping from the effect to the remotest cause" and accepting the "impostures of charms and amulets and other insignificant ceremonials."

Too many phenomena "are noted in the book of vulgar opinion with *digitus Dei* or *daemonis*, though they owe no other dependence to the first than what is common to the whole syntax of beings, nor … to the second than what is given it by … unqualifi'd judges." Doctrinaire scholastics too lazy to penetrate nature's "more mysterious reserves" are too quick to conclude that "qualities … occult to Aristotle must be so to us." Not only gravity but heat, cold and other qualities called 'manifest' are as occult as all the rest. Only the effects of manifest qualities are rightly named. Since their causes are "confessedly occult," it is evident that "the Peripatetick philosophy resolves all things into occult qualities, and the dogmatists are the only scepticks."[78]

The old philosophy is "inept for new discoveries," according to Glanvill. Nature is driven by "the most subtil and hidden instruments, which it may be have nothing obvious which resembles them." Ordinary observation cannot penetrate "the more hidden frame" within. And yet, once Aristotelian elements and qualities have been discarded, Cartesian and other innovations promise practical as well as philosophical rewards. Glanvill has hopes for a magnetic mechanism for "conference at distance by impregnated needles … without … daemoniack correspondence," a crude anticipation of the telegraph derived from a Baconian program of "magical history … enlarged by riper inspections." He also envisions "sympathised hands" used for "a new kind of chiromancy," and he sees Digby's atoms as a basis for sympathetic cures. As to the true mechanism of Digby's powder, Glanvill admits that

> it is out of my way here to enquire whether the *anima mundi* be not a better account than any mechanical solutions. The former is more desperate, the latter hath more of ingenuity.… It is enough for me that *de facto* there is such an entercourse, … and I need not be solicitous of the cause.

After telling the tale of a scholar-gypsy who could "bind the thoughts of another … by the power of advanc'd imagination," he cannot decide whether the causality was spiritual or mechanical, either "the hypothesis of a mundane soul lately reviv'd by that incomparable Platonist and Cartesian, Dr. H. More" or else "a mechanical account [of] a motion of certain filaments of the brain." Having traced a sceptic's history of decline from the lost perspicuity of Eden through the obscurity of the Peripatetics to the clarity of Descartes, Glanvill cannot do without what Cudworth had called the "one vital unitive principle in the universe, … a certain vital energy … fatally sympathetical and magical."[79]

One correspondent who informed Glanvill about mediating spirits was "the illustrious Mr. Boyle," who founded "the mechanick philosophy [and] made … substantial forms and real qualities … needless and precarious beings." Boyle and Glanvill both wanted to rescue chemistry from "delusory … Rosiecrucian vapours, magical charms and superstitious suggestions" and make it "an instrument to know the depths and efficacies of nature." Boyle was the better spokesman for experimental method and mechanical explanation. He replaced scholastic and alchemical elements with particles unmarked except by size, shape, and motion or rest, and he made motion the ultimate determinant of minimal actions that are unobservable in principle. His corpuscular theory addresses the problem of action at a distance with invisible agents acting mechanically, as described by *The Sceptical Chymist* (1661) – "the effluviums of amber, jet and other electricall concretes, [which] by their effects … seem to fall under … our sight, yet do … not as electrical immediately affect any of our senses." The phenomena in question emerge not directly from the particles constituting them but indirectly as we cognize the sense effects of structures (effluvia) whose parts cannot be sensed.

School philosophy had referred such phenomena to occult virtues, but Boyle's effluvia are concrete material things intelligible by analogy with visible vapors and steams. Although they escape observation and do the work of magical spirits, such mechanisms are artifacts of corpuscular science and – if only because Boyle's reasoning about them avoids the circular arguments of his predecessors – they improve on occult qualities. Although many admired his explanations and experiments, Leibniz and others complained that he did not push his mechanics far enough. They saw his essays on gems and drugs – two strongholds of occultism – as "infected with the plague of credulity." He tried to bring the most obdurate occult phenomena – including cures by amulet – within the scope of the new science. But his critics were more disappointed by his willingness to certify occult effects than convinced by his efforts to trace their causes to material effluvia.[80]

Boyle, Glanvill, and other virtuosi followed the exploits of the Irish healer, Valentine Greatrakes, who cured scrofula by touching for the 'King's Evil.' Although Greatrakes failed to relieve Lady Conway's migraines when he toured England in 1666, this visit put the 'stroker' at the center of stormy debate about the cessation of miracles and the causes of peculiar effects. Boyle, who attended many stroking sessions,

entered the public quarrel to answer a pamphlet that described the cures as physical. He accepted them as real and natural but disputed the cause, worrying that people might think that even scriptural miracles had material causes. Greatrakes covered himself supernaturally, attributing his healing effluvia to a special providence – an attractive option for Henry More, for whom benign Protestant healing miracles were a better bet than haunted houses or Boyle's particles.[81]

And yet Boyle, the very model of an innovating virtuoso, was also an alchemist and a committed practitioner of the art throughout his career. His strangest statements about alchemy can be read in a *Dialogue on the Converse of Angels Aided by the Philosopher's Stone*, whose claims are unusual by the standards of other alchemists whose teachings he followed. Intent on gold-making, those adepts were sometimes skilled experimentalists but usually not theosophists or spiritualists – like Fludd – with programmatic views about God, the cosmos, and bodiless spirits. They wanted to make gold, not talk to angels. But Boyle describes an alchemy that "reaches higher then gold or anything that gold can purchase." This nobler ambition is to use "a red powder"– meaning the Philosopher's Stone –"which is but a corporeal and even an inanimate thing, to acquire communion with incorporeal spirits."[82]

Like the witches, ghosts, and drumming demons beloved by Glanvill, alchemy – in Boyle's version – will "enlarge the too narrow conceptions men are wont to have." If a Philosopher's Stone is as good a channel to the spirit-world as a crystal ball, the virtuoso's science of matter will have defeated Hobbes and the atheists once again. And if doubters object, seeing no account given of how a telephonic Stone might operate, "the unaccountableness objected is no sufficient argument," according to Boyle, since "there may be congruities or magnatisms… which we know nothing of." A speaker in the *Converse of Angels* finds it

> incredible that a little powder that is as truly corporeall as … brick should be able to attract … incorporeall and intelligent beings that have neither need nor use of gold, to converse familiarly with those that perhapps by chance or fraud have made themselves possessors of a few drams or ounces of transmuting powder.

The implausibility was just another test of faith, however, arranged by a remote but kindly Providence: whatever did not kill Boyle, Glanvill, and More made them stronger Christians.[83]

9 LOOKING ALL THE WAY DOWN

Why did a founder of modern chemistry bother with the spiritualism promoted by fans of Valentine Greatrakes? Boyle's wish to protect religion made perfect sense to his contemporaries: the famous lectures that carried his name were endowed to fight godless materialism. And Boyle, a contemporary of Newton, was also a contemporary of Henry More and the younger Van Helmont – Francis Mercury. In fact, he owed his chemical apprenticeship – though he never said so – to Francis Mercury's father, Joan Baptista. The debt was indirect, however, by way of George Starkey, the elder Van Helmont's leading British disciple, writing as Eirenaeus (not Eugenius) Philalethes. Boyle – who wanted to reform astrology, not eliminate it – missed a chance to reform chemistry in Van Helmont's way, with careful weighing and measuring. Since Aristotle's qualitative science was Boyle's main target, he made a revised account of quality – not a new approach to matter-theory through gravimetric analysis – the hub of his project.

Wishing to be seen as an experimenter and mechanist – in the line of Bacon, Digby, Gassendi, and Descartes – Boyle owed more than he admitted to less fashionable predecessors: Daniel Sennert, for example. Starkey – educated in the provinces at Harvard College and sent to debtor's prison in England – was an even less attractive guide, or so Boyle thought. But he did business with the swindler Georges Pierre des Clozets, who plied him with alchemical secrets to lure him into a "Cabalistic Society of Philosophers" and extract gifts from him. Pierre – whose dealings with Boyle have been called "a gross and extravagant confidence trick"– flattered his mark as the new Hermes, a strange title for the discoverer of a law of gases, though it was Van Helmont, after all, who coined the word 'gas.' And Boyle himself wanted "to leave a kind of Hermetic legacy … and to deliver candidly … some processes chemical and medicinal that are … kin to the noblest Hermetic secrets." In light of Newton's long alchemical quest, it is no surprise that Boyle shared Newton's aims and worked to have Parliament repeal the medieval statute against transmuting base metals into silver and gold.[84]

What the sceptical chemist doubted was not alchemy in general but a particular alchemical theory, the Paracelsian doctrine of elements – favored mainly by physicians – that Étienne de Clave and other textbook writers propagated before and during Boyle's time. Since no number of quality-bearing elements, no matter how few – usually there were three or five – could do the job of minimal particles having only

mechanical features, Boyle had to oppose Paracelsian alchemy at its core. But gold-making was a different story. On grounds of theory, there was nothing for Boyle to dislike: in fact, his own conception of 'textures' as perceptible assemblages of imperceptible particles was one possible account of transmutation – though not the only one – and, like Gassendi and Mersenne in this regard, he was happy not to have final answers to every question.[85]

Boyle's unpublished *Dialogue on Transmutation and Melioration of Metals*, ten years or so in the making, proposes no grand mechanical solution to the problem of transmutation – a problem that Boyle takes to be real not just from wide reading but even more from personal experience. The *Dialogue* preserves his eyewitness account of a procedure that left him "satisfied by the colour and ponderousness of the metall … that it was the product of a real transmutation." This process – successful in Boyle's view – was a traditional alchemical operation. To turn lead or some other metal into gold, the alchemist – an unnamed French visitor in this case – had to make the Philosopher's Stone first, after many steps had already been taken. Once the Stone was made, even a minuscule amount, adding other materials would enlarge it and increase its power: 'multiplying' the Stone would eventually multiply the production of gold. The final step in producing a piece of alchemical gold was to 'project' or throw a bit of the Stone into a crucible of molten lead or heated mercury.[86]

Like Starkey, his main guide to the art, Boyle disagreed with other alchemists about preparations for making the Stone. His special technique – which he kept improving for forty years – was to prepare a "philosophical mercury" whose powers, absent in ordinary quicksilver, were required to dissolve gold and prepare it to be absorbed by the Stone. To achieve this special dissolution, it was no good to clean the mercury in ordinary ways and remove only surface impurities. To eliminate "internal superfluities," the mercury had to be "animated." Only animation would free the hidden "seeds of gold," enabling them to sprout and grow – like a plant. Boyle sees his procedure as organic, not mechanical, and he was not ashamed of it. He published a description of the "incalescence of quicksilver with gold" in the *Philosophical Transactions*, the official voice of the Royal Society and the new science in England, though the report buries his aims and procedures in verbiage. Other members of the Society, Locke and Newton, were still communicating – also evasively – about his process in the early 1690s. Part of their frustration was that Boyle never told anyone *how* he made a philosophical mercury. He was as secretive about the practical side of his alchemy as any other adept.[87]

Despite disingenuous sniping from Newton, who in this field was a rival, Boyle never stopped experimenting with alchemy – one motive for his wanting the old law against transmutation off the books. As an experimenter, he thought he had achieved transmutation. As a theorist, he could even explain it in corpuscularian terms – indeed, must expect it – as a rearrangement of particles or "the bare reunion of some parts." And as a scourge of the school philosophers, he did not appeal to a transfer of real qualities or substantial forms. He had learned enough from Bacon, Galileo, Descartes, and Gassendi to make him an enemy of Peripatetic obscurity, and his own research convinced him that some "vulgar chymists" were as confused as the abstracted scholastics: nothing as complex as elemental fire or Paracelsian sulfur could be a principle of explanation or ontology since further reduction of such properties as heat or combustibility was obviously required.

The Sceptical Chymist is Boyle's masterpiece, but the *Origine of Formes and Qualities* (1666) is richer theoretically, discussing occult qualities at length. He prefers corpuscles to forms and qualities not because he can detect them but because he trusts them as material and picturable. Homely metaphors based on keys, locks, clocks, pins, and mills help demystify qualities, even when the analysis leads to imperceptible posits. From experiment and from analogy between the seen and the unseen, Boyle postulates objects that he cannot sense, aiming for a corpuscular solution. Obsession with substance had led vulgar chemists and abstracted scholastics to forget structure, as if one could explain how a clock keeps time by saying whether its gears are brass or steel. By demoting form to material structure and by reducing species to conventions of human use, Boyle robs substantial or specific forms of their reality and their magic. Like plastic powers or world-souls, substantial forms explain nothing, leaving "the curious enquirer as much to seek … as men commonly are for the particular causes of … witchcraft, though they be told that it is some devil that does them all."[88]

The corpuscles theorized by Boyle, though they have picturable properties of size, shape, and motion redefined as primary qualities, are no more observable than occult qualities. He argues that perceptible properties emerge only when these tiniest bodies aggregate in larger structures. And the resulting secondary qualities, such as color or odor, are not the scholastic entities that Molière mocked. Never escaping the world of magic, Boyle improves on occult qualities by replacing them with other imperceptibles, minute bodies to which he imputes properties like those of ordinary objects – ground glass, for example. Physicians traditionally

treated that material as a poison with a "deleterious faculty" – an occult quality which is "a peculiar and superadded entity." But for Boyle what does the damage is "nothing distinct from the glass itself, … [whose] sharp points and cutting edges are enabled by these mechanical affections to pierce or wound … the stomach and guts."[89]

For Boyle, the toxic virtue in glass is just its structure, not an additional faculty or quality. Explaining the effects of a poison by a poisonous quality only posits an unexplained ingredient, tagging it with the feature whose explanation is wanted – like the dormitive virtue of opium – but giving no account of the feature: naming and locating notional entities in this way explains nothing. "What is it to me to know that such a quality resides in such a principle or element whilst I remain altogether ignorant of the cause?" Having framed this question in the *Sceptical Chymist*, Boyle goes on to ask "how little does the chymist teach the philosopher of … purgation if he only tells him that the purgative vertue of medicines resides in their salt? … 'Tis one thing to know a man's lodging, and another to be acquainted with him."[90]

John Locke's matter-theory is a refinement of Boyle's, in contrast to Locke's more original critique of substance, species, and the various confusions that obscured the use of these terms in school philosophy. Locke abolished forms and species with a philosophical analysis of naming, knowing, and classifying that exceeds Boyle's ambitions. But his views on quality are close to Boyle's. Starting with a distinction between ideas as percepts or concepts and qualities as powers in objects to produce ideas in us, Locke distinguishes three kinds of quality. Real primary qualities such as "solidity, extension, figure and mobility" are so basic that all bodies – even the smallest – possess them. They produce ideas in us that actually resemble their causes. Not so with secondary qualities like color and heat, which "are nothing in the objects themselves but powers to produce various sensations in us by their primary qualities." Qualities of the third kind act like secondary qualities, except that they cause sensations in us indirectly by first changing the "texture" of some other object. All phenomena perceived by us, even those long treated as occult, reduce to primary qualities or their textures, though the weakness of human knowing has kept nature's mechanisms secret.[91]

With a different theory of occult *faculties*, Fernel had anticipated the use that mechanical philosophers would make of the term 'power' to distinguish features of an object from its ability to affect an observer – or a patient. But several things made the mechanical philosophy and its microscopic particles more credible than Fernel's faculties and thereby

weakened the old theories of magic: one strength of the new science was to make unseen structures intelligible by pictorial analogies with gross phenomena, natural or artificial; another was its confidence that new instruments could reveal features of the world never seen before because they were too small or too far away.[92]

When Galileo and Descartes looked for distant moons or tiny particles, new tools – telescopes and microscopes – equipped them better than Fernel. Although Agrippa had found mirrors and lenses merely spell-binding, Porta speculated about ways to make them useful. Meanwhile, the influence of ancient atomist texts – whose recovery had started in 1417 – grew without help from optical instruments, though it took a long time for atomism to penetrate natural philosophy. Near the end of this slow process came Galileo's exposition of particulate matter in *The Assayer*, which also mentions a magnifying device. Galileo then built the instrument used to produce the first scientific illustration made with a microscope – the celebrated 1625 broadsheet showing three magnified bees. Gassendi, another atomist, looked through a microscope at crystals and saw their geometry. Descartes theorized about magnifying lenses and imagined pictures of an invisible micro-world.[93]

"By means of the Telescopes," wrote Robert Hooke in 1665, "there is nothing so far distant but may be represented to our view, and by the help of Microscopes, there is nothing so small as to escape our inquiry. Hence there is a new visible world discovered, … all the secret workings of Nature." Equipped with new instruments, and falsely assuming that pictures of the world could go all the way down, the mechanical philosophers made the shift from haptic to visual primitives and from surfaces to depths – at least in theory. Just as the telescopic sight of moons circling Jupiter extended terrestrial physics to the whole cosmos, microscopic views of minute structures elicited analogies from macro-objects to micro-objects. Depicting real things never seen before, Hooke used the engravings of his lavishly illustrated *Micrographia* to picture cheese mold that looked to him like "microscopical Mushroms" and to show a gnat's antennae resembling "the horns of an Oxe."[94]

By the time Hooke published his microscopic investigations, the mechanical philosophy had set new standards of intelligibility for natural philosophy. But fascination with the microscope was as much an effect as a cause of new efforts to save the phenomena by picturing them. If microscopy came too late to explain the transition from Fernel's physics of haptic qualities to a physics of pictured particles, where should we look? Europeans in the interim were stimulated by debates about

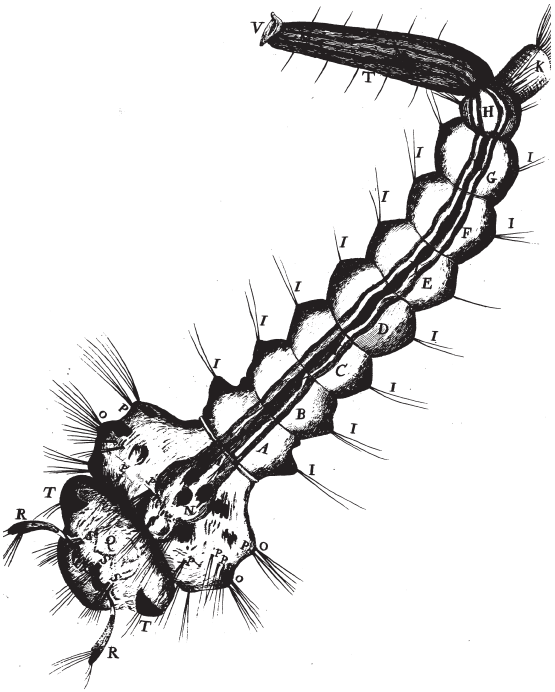


Figure 103. Hooke's Gnat.
(Hooke [1665], sch. XXVII, Figure 1)

qualities, provoked by atomist materialism, and convinced by the pictorial arts to welcome that momentous change, which did not eliminate wonders from natural philosophy – not when strange new worlds were being observed under the microscope. Nor was the unseen banished from the new science. On the contrary, Newton's physics of force and Malebranche's biology of *emboîtement* would give unseen agents a greater role than ever, though respectable researchers like Boyle and Locke no longer called them 'occult.'[95]

Before the *Essay* made him famous, Locke was studying and practicing medicine. Until he read Thomas Sydenham's *Method of Curing Fevers*, it was medical chemistry that mainly occupied him, with Boyle as his chief guide to the science of matter. His relations with Boyle peaked in 1666, when the *Origine of Formes* appeared along with Sydenham's *Methodus*, a year before he left Oxford for London to serve as Lord Ashley's physician. Sydenham introduced him to a phenomenalist medicine that discards natural philosophy as a basis for clinical practice, replacing speculation

about the causes of disease with natural-historical observation of the course of illness. While traveling in France after 1675, Locke kept up the medical journals that he had begun more than twenty years earlier. His sustained effort to compile clinical data reflects his respect for Baconian natural history, tempered by his partnership with the sceptical Sydenham. The notes, recipes, and experimental observations that fill Locke's commonplace books also record his experience of medical magic.[96]

During his Oxford period, Locke's reading – like Boyle's – included authors prominent in the recent history of occultism: Fernel, Cardano, Paracelsus, Campanella, Sennert, and the elder Van Helmont. He also read the alchemical works of Basil Valentine, and although his passion for chemistry cooled as Sydenham's influence grew, his duties as Boyle's literary executor relit the Hermetic flame in the early 1690s, when Newton tried to dampen his interest in transmutation. Scattered comments in Locke's journals about alchemy and other types of occultism do not show that he believed in amulets, ghosts, or astrological botany, though plainly these topics were still part of the conversation among scientific revolutionaries.

Locke records clinical data to defeat Digby's claim that mole's blood will cure epilepsy, though his description of a patient's molelike behavior ("in a fit he would run his nose against the ground like a mole") could have been written by Agrippa. In the same vein, a recipe of 1686 says "split a standing young oak, passe child between the divided parts. Binde the tree togeather agen and as the tree closes and heales up again soe will the burstnesse close in the child." The snake-stone, on the other hand, is "for the most part if not wholy factitious and of noe such virtue for extracting of poison as is reported." Although he heard a colleague denounce bezoars as medically useless, he also plans to experiment on a specimen "which is truly orientall and not counterfeit," and he writes out a long description of "the vertues of the wound wood." Locke's journals show that the natural history in early modern thought owed as much to magic as to science, as much to Porta as to Bacon. The same philosopher produced the *Essay*'s crisp abstractions and the murkier pages of the journals, which link him to a world where magic still lurked in natural philosophy. Boyle fashioned himself in that world, while Locke – like Newton – turned his public face away from it.[97]

Locke knew the medical lore that referred poisonous, purgative, narcotic, and other effects of drugs to occult qualities, in order to explain why a peony root relieves epilepsy or why a lapis lazuli amulet reduces a quartan fever. Like any other drug, these medications work mechanically,

according to Locke, even if the mechanism is unknown. "The color and taste of opium," he argues, "as well as its soporific and anodyne virtues, [are] mere powers, depending on … primary qualities." Since Galen's day, the attested effects of such drugs had been refractory to physics, but Locke – applying the simple notion of fitness between parts – opens the door to a demystified theory of matter with Boyle's (and Gassendi's) locks and keys. "Did we know the mechanical affections of the particles of rhubarb, hemlock, opium and a man, as a watchmaker does those of a watch," Locke claims, "we should be able to tell beforehand that rhubarb will purge, hemlock kill and opium make a man sleep." Since the healers who had made such predictions for millennia lacked a good theory to explain their clinical experience, they reified the lack in purgative, poisonous, or narcotic qualities. Locke finds such features of things in no way occult – "no more difficult to know than it is to a smith to understand why the turning of one key will open a lock, and not the turning of another."[98]

Nonetheless, the clinical habits that he had learned from Sydenham made Locke cautious, less hopeful than Hooke that microscopes might actually reveal nature's secret workings. Gravity was another topic that made him hesitate. The first version of the *Essay* declared that bodies can affect one another only by contact, a position muted in later editions, after Newton's *Principia* challenged Locke's thinking. Still insisting that the only conceivable interactions are bodily, he allows that he has been

> convinced by … Mr. Newton's incomparable book, that it is too bold a presumption to limit God's power … by my narrow conceptions. The gravitation of matter towards matter, by ways inconceivable to me, is not only a demonstration that God can … put into bodies powers … above what can be derived from our idea of body, or can be explained by what we know of matter, but also an unquestionable and everywhere visible instance, that he has done so.

When Locke – like Boyle – argues from bodies visibly in motion to analogous but invisible motions of microscopic matter, the posits in his theory are more credible than occult qualities because they can be reduced to atomic motions, which, unlike occult qualities, can be analogized with ordinary phenomena. But when he joins Newton by attributing powers to body that are professedly inconceivable and beyond physical explanation, he abandons any claim to superior intelligibility for his preferred account of gravity – long considered an occult quality and now, in its Newtonian version, to be condemned again as occult by Leibniz.[99]

10 EXIT THE ASYLUM

Although the first notice of the *Principia* in the *Acta eruditorum* did not complain about Newtonian gravity, the idea of attractive force soon drew fire from critics who thought that only mechanical causes could operate in physics. Even though attacks on gravity as a retreat to occult qualities reached their full pitch long after his revolutionary book appeared, Newton knew from the start that his concept of force acting over distance would look like a startling defection from mechanist principles. As if to anticipate the protests, the first sentence of the first edition of the *Principia* pledges allegiance to a mathematical reform of mechanics based on the work of "the moderns, rejecting substantial forms and occult qualities."[100]

Despite Newton's declaration, frequent and exquisite qualifications of his ontology of force were to follow. When he learned that Richard Bentley was preparing the first Boyle lectures for 1692, Newton asked the theologian not to ascribe to him "gravity as essential and inherent to matter" because it would detract from God's ubiquitous presence and activity. He also worried about the magical connotations of "innate gravity." And he bristled when Leibniz compared him to Roberval, who not only made gravity resident in bodies but even acknowledged it as an occult quality. Worse was a charge by the *Acta eruditorum* that Newtonians had traded Boyle's mechanics for the mystifications of Fludd. Between Newton and Leibniz the public debate became vicious only after 1708, though the differences between them were large by the early 1690s.[101]

Newton called three accounts of gravity acceptable to him and – correcting Leibniz – insisted that none was a retreat to occult qualities. Gravity could be either "a power whose cause is unknown to us, or … a power seated in the frame of nature by the will of God, or … a power seated in a substance in which bodies move and flote without resistance and … acts by other laws than those that are mechanical." This third option, a non-mechanical aether, was one of many such devices – material, spiritual, dense, subtle, phlegmatic, elastic, electric, alchemical – that Newton never fully rejected or accepted. He considered mechanical aethers only twice: just before finishing the *Principia* and again twenty years later, while preparing the first Latin *Optics*, because other conceptions of gravity seemed too heterodox to put in print.[102]

The second option, making God the cause of gravity, was surely compatible with a scientific program meant to yield knowledge of God, "to discourse of whom … does certainly belong to natural philosophy." But

Figure 104. Blake's Newton, Pencil Drawing, c. 1795.
(Blake [1970], p. 16)

Newton's voluntarist theology, with an omnipresent Creator continually energizing his creation, seems unsuited to the omnipotent scientist of Pope's couplet:

> Nature and Nature's laws lay hid in night:
> God said 'let Newton be' and all was light.

The *Principia* ends reverently, with praise for the "Lord God pantokrator [who] constitutes duration and space," as in the spiritualist cosmologies of More and Cudworth. Like them, the young Newton feared Cartesian mechanism as "a path to atheism": to counter the threat, he tried to reconstitute a pious physics from the remains of ancient wisdom – gentile and Jewish, Stoic and Platonic – reaching back to a Mosaic atomism and to theologies of space transmitted by the early rabbis to medieval kabbalists and their later expositors. The utter dependence of passive matter on an active spiritual God was theological and physical dogma for Newton. What better locus for a universal force of attraction than a universe where the omnipresent Almighty constitutes duration and space?[103]

Even before Leibniz accused him of chaining physics to a continuing miracle, Newton sometimes took the third approach to gravity – not to name any cause at all. A draft of the General Scholium to the *Principia* echoes the epistemological caution of Mersenne and Gassendi as well as Locke: we "do not know the substances of things.... We gather only their properties from the phenomena, and from the properties [we infer] what the substances may be.... By no sense ... do we know the innermost substances." Newton's clearest public statement on occult qualities, in Query 31 of the *Opticks*, best defines the relevant differences between him and Leibniz. He claims that a quantified phenomenalist account of gravity – respecting the experimental facts, producing calculations and stating no cause, whether divine or spiritual or mechanical – expresses a physical law without appealing to occult qualities.

To show how bodies fall, he posits a principle – gravity – characterized as a manifest (not occult) force with an unknown cause. Conceding that gravity's cause is occult in the sense of being unknown (though not necessarily unknowable), he denies that gravity itself is occult. Gravity is manifest, no less manifest than heat was to Suárez. But Newton maintains that scholastic gravity is an occult quality (in the traditional sense) that also differs from his gravity in being an occult cause of various physical phenomena – falling, heaviness, and so on. For the scholastics and for Newton, it takes two agents to account for the salient phenomena, but for Newton the proximal agent called 'gravity' is a manifest force. For him only the unknown distal agent is occult, whereas the proximal agent is occult for the scholastics, and the distal agent is metaphysical, an imperceptible form and hence perceptually (if not analytically) occult. On other occasions, Newton looked for gravity's unknown cause in theology rather than physics or metaphysics, finding it in a living God who touches the world everywhere.[104]

The mature Newton was never happy with any mechanical account of gravity. Like Henry More, he distrusted the mechanical philosophy as a danger to religion, and he thought a thoroughly mechanist physics would end in begged questions – like Gassendi's "hooked atoms." By the late 1670s, he was ready to break the first commandment of the mechanical philosophy, the law of contact action, and replace it with "some principle acting at a distance." By the time he wrote the *Principia*, he saw this nonmechanical force at work in most natural phenomena. And alchemy contributed as much as astrophysics to his breach with the customary ordinances of natural philosophy, though he also had more conventional motives.

For the macroscopic phenomena of astrophysics, orbital dynamics excluded a resistant mechanical aether, and no mechanical explanation of cohesion would work at the microscopic level. Rejecting fancifully shaped atoms as well as bodies "glued together by rest, … an occult quality," Newton infers "from their cohesion that their particles attract one another by some force." He asserts an analogy from visible to invisible bodies, assuming that

> if nature be simple and pretty conformable to herself, causes will operate in the same kind of way in all phenomena, so that the motions of smaller bodies depend upon certain smaller forces just as the motions of larger bodies are ruled by the greater force of gravity.

He draws broad conclusions from this "analogy of nature," speculating that "almost all the phenomena of nature will depend on the forces of particles, … although the names of attractive and repulsive forces will displease many." He turns the hitherto magical notion of action at a distance into a scientific law by demonstrating it experimentally and measuring it mathematically, obeying two commandments of the quantitative physics that he invented.[105]

Newton's immense reputation tempts us not only to misread his views about force but also to evade the hard facts of their alchemical pedigree. When he agrees with Bentley that it is "unconceivable that inanimate brute matter should (without the mediation of something else which is not material) operate upon and affect other matter without mutual contact," the erudite theologian certainly saw the point of the parenthesis. The mediating agent is divine, and divinity is spiritual, active, and alive, in organic communion with its creation. One source of Newton's theological physics was the Mosaic cosmology reconstructed by More and Cudworth, and another was alchemy, taken not just from Boyle but from less reputable alchemists – Eirenaeus Philalethes, Cleidophorus Mystagogus, Michael Sendivogius, and others.

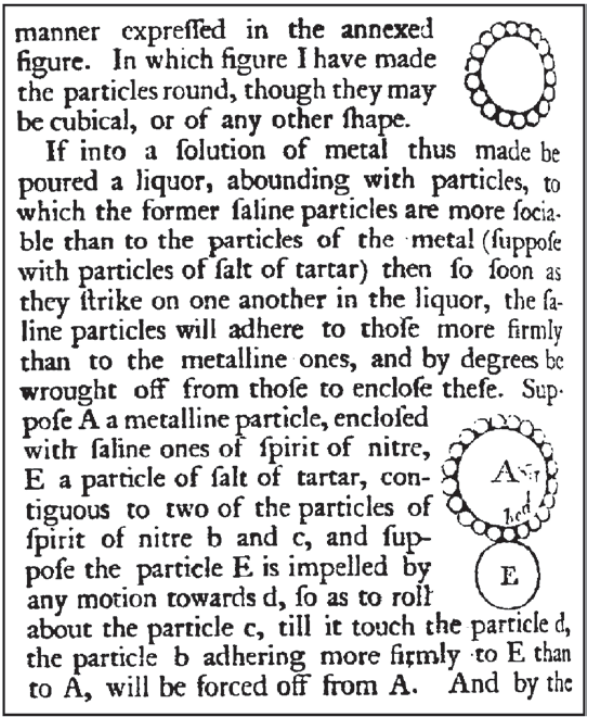
For more than two centuries after Newton died, his arcane inquiries were hidden from his admirers. But the facts are indisputable. He worked long and hard at alchemy, writing over a million words about it. His Hermetic labors continued for more than twenty-five years; he wrote half his alchemical papers after the *Principia*; and he gave his best to the art, respecting its esoteric conventions but also applying his experimental, quantitative, and methodical genius. Neither a juvenile indiscretion nor a senile aberration, alchemy occupied Newton's best years, before and after the *Principia*. Until he lost interest, he corresponded with Locke

about the secrets in Boyle's papers – in particular, the recipe "for the sake of which Mr. Boyle procured the repeal of the Act of Parliament against Multipliers." Around 1696 he summed up his views in an essay on *Praxis* that describes substances "fit for magicall uses" which achieved (so he thought) the "multiplication" of gold, the main goal of the alchemical work – as Starkey and Boyle understood it.[106]

Praxis, the largest of Newton's original alchemical treatises, is just one of his writings on that subject, most of which are notes or copies from texts written by others: some of both types – the original material and the copied – bear on his physical discoveries and published works. *The Vegetation of Metals* uses an alchemical model for active principles embedded in a conventional aether but capable of "a more subtile secret and noble way of working," foreshadowing the "secret principle of unsociableness" that activates the otherwise mechanical aether in the *Hypothesis of Light*. A later piece *On the Nature of Acids* describes "particles of acids … endowed with a great attractive force … in [which] force their activity consists": active alchemical principles are sublimated into the attractive forces of Newton's physics.[107]

Throughout his alchemical career, he examined substances and processes that suggest a Hermetic basis for physical ideas. Like Boyle, he relied more on Eirenaeus Philalethes – George Starkey – than on any other alchemist for guidance in his long quest. A large part of the hunt was for the "green lion," an ore of antimony that produced a purified crystalline substance, the "star regulus" of antimony that Newton believed to have attractive powers. A variant of the same process yielded the "regulus of Mars," a model for inter-particulate forces. Another rare substance was the alchemical "net" that led him to think about "retiform particles" in matter that would "offer unrestricted passage … to magnetic effluvia and … light." An important message in alchemy's cryptic speech was its constant reference to spiritual, vital, organic, and sexual properties of matter – properties banned from the post-Newtonian sciences of matter but crucial to Newton himself, who needed such sources of energy to activate an otherwise passive world of "mere mechanical causes."[108]

When Newton wrote to Henry Oldenburg in 1676 about Boyle's experiments on the "incalescence of gold," he claimed to doubt the procedure and worried that it could not "be communicated without immense dammage to the world if there should be any verity in the Hermetick writers." Despite the disclaimer, this evasive genius – who saw only "cheats and impostures" in a haunted house where More would have seen the hand of God – had more tolerance for arcane wisdom, the


manner expreſſed in the annexed figure. In which figure I have made the particles round, though they may be cubical, or of any other ſhape.

If into a ſolution of metal thus made be poured a liquor, abounding with particles, to which the former ſaline particles are more ſociable than to the particles of the metal (ſuppoſe with particles of ſalt of tartar) then ſo ſoon as they ſtrike on one another in the liquor, the ſaline particles will adhere to thoſe more firmly than to the metalline ones, and by degrees be wrought off from thoſe to encloſe theſe. Suppoſe A a metalline particle, encloſed with ſaline ones of ſpirit of nitre, E a particle of ſalt of tartar, contiguous to two of the particles of ſpirit of nitre b and c, and ſuppoſe the particle E is impelled by any motion towards d, ſo as to roll about the particle c, till it touch the particle d, the particle b adhering more firmly to E than to A, will be forced off from A. And by the

Figure 105. Newton's Sociable Particles: Letter to Boyle, Feb. 28, 1679. (Birch [1741], p. 242)

"auricular traditions" that Bacon condemned, than some would like in a champion of science. Secrecy is the soul of alchemy, whose mysteries Newton found in physical phenomena. In 1679, after giving Boyle an account of repulsions and attractions from pressure changes in the aether, he went on to describe alchemical substances as instances of "a certain secret principle in nature by which liquors are sociable to some things and unsociable to others."[109]

Newton calls on this secret principle to explain to Boyle – and to show him – how acids dissolve metals:

> Particles of the spirits, as they in floting in the water strike on the metal, will by their sociableness enter into its pores and gather round its outside particles, and by advantage of the continual tremor the particles of the metal are in, hitch themselves in by degrees between those particles and the body and loosen them from it, … the saline particles still encompassing the metallick one as a coat or shell does a kernell, after the manner expressed in the annexed figure.

Query 31 of the *Opticks*, speculating about mechanisms that might be more satisfactory than occult qualities, calls on the same mediating agency – the same shell of acid particles (like alchemical sulfur) sociably surrounding a "denser and compacter" kernel of metal (like alchemical mercury) – which Newton had pictured for Boyle even though he could not see it:

> As gravity makes the sea flow round the denser and weightier parts of the globe of the earth, so the attraction may make the watry acid flow round the denser and compacter particles of earth for compacting the particles of salt. For otherwise the acid would not do the office of a medium.

The analogy of nature justifies this comparison of invisible (but not unpicturable) molecular activity with visible phenomena: micro-attraction is like macro-gravity. The molecular force is a secret sociability and a cousin of occult sympathies and antipathies, topics familiar to the young Newton, who listed gravity and levity with other qualities in a typically scholastic catalog of such items. The older Newton tried to take gravity out of that setting. But physics and magic were both parts of natural philosophy, to which his rivals accused him of restoring the discredited doctrine of occult qualities.[110]

Newton and his followers refuted those accusations again and again. Leibniz understood the rebuttals but did not accept them, not only because of his priority dispute with Newton but also because his always evolving metaphysics and dynamics conflicted with the Newtonian system. The *New Essays* were not published until 1765, so Newton and Locke were spared that savage commentary by Leibniz, who wrote before the feud erupted in public. Holding that "everything which is in accord with the natural order can be … understood by some creature," Leibniz goes further and equates physical with mechanical intelligibility, forbidding any non-mechanical explanations of physical phenomena unless they are also miraculous. "This distinction between what is natural and explicable and what is miraculous and inexplicable removes all the difficulties," he claims:

> To reject it would be to uphold something worse than occult qualities, and thereby to renounce philosophy and reason [in] an irrational system which maintains not only that there are qualities which we do not understand – of which there are only too many – but … some that could not be comprehended by the greatest intellect if God gave it every possible opportunity.

Leibniz finds his distinction indispensable to "any rational philosophy." Any system without it will be either

> fanatical, like Fludd's Mosaical Philosophy, which saves all phenomena by ascribing them … miraculously to God, or barbarous, like that of … philosophers and physicians … who … fabricate faculties or occult qualities … like little demons or imps to perform whatever is wanted.

Had Newton known that Leibniz also associated with gold-makers, had he realized that Leibniz also took philosophical inspiration from alchemy, or had he understood that Leibniz's early interest in the Lullian art grew into a "universal characteristic" with roots in Renaissance occultism, Newton might have seen the magic-baiting as hypocritical.[111]

The mature monadic philosophy might also have puzzled him. Beneath Leibniz's unflinchingly mechanist physics is a dynamic, vitalist metaphysics with debts to the occult philosophy. Principles taught by Ficino and Agrippa are invoked – organic sympathies sustaining the harmonies of the universe, a world of immaterial substances that behave like souls and minds. Called monads in the mature system, these substances resemble the substantial forms in scholastic theories of magic. Leibniz builds his universe not with material particles but with "atoms of substance, … real unities … which are the sources of action and the absolute first principles.… One could call them metaphysical points. They have something vital and a kind of perception."

Borrowing a Greek word used by Dee and Bruno, and later by Lady Conway and the younger Van Helmont, Leibniz calls his immaterial atoms 'monads.' Having no parts or shapes, they are indistinguishable "except by … internal qualities and actions, and these can only be … perceptions … and … appetitions." Monads are changeless except as they tend from one perception to another, displaying the tendency that Leibniz calls 'appetition.' The Creator fixes the sequence of states through which each monad passes, having no real causal relation with anything but the Creator. The states are the matrix for monadic 'perceptions,' a variety of expression, such that "one thing expresses another … when there is a constant and regular relation between what can be said about one and about the other."

Real properties are metaphysical. We observe physical properties in bodies only in the way that we see rainbows, which – as rainbows – have no substance, no center of unity or action. "In themselves material things are merely well-regulated phenomena," and the only real things are immaterial. Because matter is a mere phenomenon, impact is a dance

of spectral bodies, a shadow play at two removes, since corporeal substances, acting out the script of final causes, do not really contact one another. But the world is a pleroma of sympathetic animation. Its reality is living substance, and its phenomena are fertile matter: "there is nothing fallow, sterile or dead in the universe." Every substance is in some way life and mind, and every mind perceives the activity of the whole, though confusedly, like hearing the roar of an ocean.[112]

Long before he committed Newton's force to the asylum of occult qualities, Leibniz had picked his own route to a metaphysics of force based on a revival of substantial forms. His path ran against the mechanical traffic in post-Cartesian philosophy, and he chose it in full awareness of the likely reaction: that his restoration of forms (like Newton's use of force) would be seen as betraying the Cartesian revolution and that his ensoulment of substance would tie him not just to Aristotle and the scholastics but to disreputable figures like Bruno and Campanella. He tried to distance himself from the magical enthusiasms of the Renaissance and from the "inscrutable and implausible hypotheses" of his own time. Unlike Descartes, however, he never repudiated erudition or history.

His librarian's memory of philosophy's past was copious but also critical. In an early letter, he pictures "the mantle of philosophy" as ripped apart not only by atomists and mechanists but also by less stylish innovators who challenged authority with new kinds of occultism. In a revealing passage of the *New Essays*, Theophilus (Leibniz) tells Philalethes (Locke) that he has

> been impressed by a new system [that tells] how to make sense of those who put life and perception into everything – e.g., Cardano, Campanella, and (better than them) the late Platonist Countess of Conway, and our friend the late M. Franciscus Mercurius Van Helmont (though otherwise full of meaningless paradoxes) together with … the late Mr Henry More [who also] went wrong.

Despite their mistakes, the nature-philosophers and Platonists are valued for their vitalist sensibilities. But when Leibniz comments on their doctrines – the world-soul, the hylarchic principle, metempsychosis – his comments range from critical to derisive. Yet he welcomes "the vitalism of the kabbalists and hermetic philosophers who put a kind of feeling into everything," along with Platonic and Pythagorean harmonies, "the Stoic connectedness" and "the forms and entelechies of Aristotle and the Scholastics." In his own system Leibniz saw all of them sanitized and

"united as if in a single perspective center.... Our greatest failure has been the sectarian spirit."[113]

The eirenic spirit came naturally to a thinker who believed in metaphysical concord. In the first public statement of his mature metaphysics, Leibniz unveiled the notion of preestablished harmony. An ancestor was the Stoic and Neoplatonic concept of sympathy revived by Renaissance theories of magic. "God has originally created ... every real unity," he explains, "in such a way that ... there will be a perfect accord between all these substances which produces the same effect that would be noticed if they all communicated ... by a transmission of species or qualities." Leibniz substitutes concomitance for every cause that is not divine. Monads and the matter embodying them undergo changes – motion for bodies, perception for monads – and every created substance harmoniously accommodates the changes of every other substance. Phenomena change symmetrically with substances because God made them like "two clocks ... in perfect agreement." The phenomenal changes that we perceive as produced by efficient causes are really shadows of a higher order of final causes. When one body seems to influence another, the real action transcends them both, residing in the divine disposition of immaterial substances as the sole vehicles of active force.

Leibniz declares that "all the bodies of the universe are in sympathy," each expressing all the others from its own point of view. To the metaphysical concert of perceptions corresponds a physical concord of motions. "Every motion in this plenum has some effect upon distant bodies ... to any distance whatever. As a result, every body responds to everything which happens in the universe." A symphony of minute perceptions accounts "for that marvellous pre-established harmony ... amongst all the monads ... which takes the place of an untenable influence of one on another." Forces of life and mind make the world coherent. "To exist is nothing other than to be harmonious," Leibniz claims, adding that "the mark of existence is organized sensations."[114]

This is the metaphysical platform from which Leibniz hoped to expose Newton's betrayal of the mechanical philosophy – a strange, intricate, elegant construct made all the more remote from typical physical concerns by Leibniz's willingness to "deny the action of one corporeal substance upon another." If Newton's physics needs action at a distance, Leibniz's metaphysics requires bodies to interact in a very odd way. The young Leibniz complimented Campanella (obliquely) for recognizing that if bodies have little souls, they should also be equipped with sense. The older Leibniz sometimes sounds like Campanella, finding "reason to

think that there is an infinity of souls … possessing something analogous to perception and appetite, and that all of them are … substantial forms of bodies."

But there is no confusing Leibniz's system with the occult philosophies that it resembles in a few ways. Although attributes of power, perception, and appetite had made nature magical for Campanella, Leibniz keeps his living cosmos disenchanted. He revives substantial forms, likens them to souls, and endows them with organic force, but he defines those points of vital power in strictly metaphysical terms. Monadic powers of life and sense are remote from the everyday organic actions that had grounded the occultist worldview. Each monad expresses and perceives every other, yet "monads have no windows through which anything could enter or depart." Leibniz specifies that "these forms change nothing in the phenomena and must not be used to explain particular effects." For substantial forms to operate in natural magic – causing Newton to describe form as the source of scholastic occult qualities – they had to bear some real relation to physical phenomena. This was the tie that Leibniz cut, freeing hylemorphism from its bondage to natural magic.

Deaf to any externalities after the original creative act, Leibniz's chorus of living monads was of little use to the magus, despite its kinship with older agencies of natural magic. Mechanics rules rigorously in Leibniz's world. Even after he decided against Cartesian extension, he maintained the necessity – indeed, the uniqueness – of mechanical explanation in physics, including the physics of organic and invisible bodies. Despite his immaterialism and animism, despite his talk of sympathies acting at a distance, Leibniz could claim loyalty to the mechanist paradigm because – at least in principle – he could explain the motions of bodies, once created, by contact action.[115]

11 PRINCIPLED REASONS

Before the Enlightenment, many important philosophers – from Plotinus and Proclus through Albertus and Aquinas to Ficino and Bruno – had tried to justify magic philosophically. But then that effort ended: we see Leibniz ending it. Since late antiquity, many discussions of physics, metaphysics, psychology, ethics, and other divisions of philosophy had influenced, and were influenced by, attempts to find good reasons to believe in magic and by contrary attempts to dismiss those reasons. That contest, no longer important or even respectable for Leibniz, had rules that Agrippa once described:

> a person who aspires to study this subject cannot understand the rational basis (*rationabilitas*) for magic without instruction in physics, which reveals the qualities of things and opens up the occult properties of every entity; without skill in mathematics and the aspects and figures of the stars on which the higher power and property of everything depends; and without learning in theology, which makes manifest the immaterial substances that control and administer everything.

Some critics of magic have thought that no such belief can be justified by any reasons worth attending to; they insist that magic is a species of supernaturalism, where reason-giving itself has been replaced by the special pleading that comes with appeals to non-natural agencies. But Agrippa, linking magic to the naturalism in natural philosophy, insists on principled reasons for calling magic "the supreme and most perfect science, a higher and holier philosophy – in the end, the absolute summation of the whole of philosophy at its noblest." And Agrippa was still famous – or notorious – when Leibniz was born in 1646: James Freake's English translation of Agrippa's magic manual, still in print today, was published in 1651. By that time, however, the philosophers whom Leibniz might respect were already losing respect for Agrippa's magic. As for Leibniz himself, he joked that "the occult philosophy of Agrippa … assigns an angel to everything as its obstetrician."[116]

Commenting on his own new system, George Berkeley left a telegraphic note that can also stand as an epitaph for the earlier philosophizing about magic: "Anima mundi. Substantial Forms. Omniscient radical Heat. Plastic vertue. Hylarchic principle. All these vanish." With a few exceptions like Berkeley's *Siris* and Kant's *Dreams of a Spirit-Seer*, occultism vanished from the canonical history of philosophy after Leibniz. Its erasure from the philosophical agenda was eventually so complete that its earlier prominence was forgotten. Just as Fontenelle found Newton's early curiosity about astrology too embarrassing to mention in an obituary, later historians of philosophy seldom asked whether the elders of their profession bothered with topics so disreputable.[117]

Leibniz himself gave the occult philosophy a final hour of respectability, though the moment was troubled and fleeting. His sympathetic harmonies and living monads are – up to a point – descendants of ancient magical ideas revived during the Renaissance, though the modifications made by Leibniz were no help for the future of magic. His system left its mark on science through Boscovich and on philosophy through Wolff and Kant, but it could not rescue the occult philosophy from disgrace – nor would he have wished for that redemption.

Still, a new phase of occultism sold many, many books in the Age of Enlightenment. As before, some of its promoters were scholars, scientists, physicians, and members of élite bodies like the Royal Society, but others were swindlers, forgers, thieves, illusionists, and stage magicians. Most are less than famous today: Sigismund Bacstrom, Francis Barrett, John Clowes, Gustavus Katterfelto, Ralph Mather, Charles Rainsford, Ebenezer Sibly, and Thomas Taylor, for example, were all proponents of occultism in Enlightened England. General Rainsford, an alchemist Freemason, is remembered mainly for his military and political career. Taylor, who made lexical history by calling his supernaturalist spiritualism "the occult," studied the Neoplatonists and made English translations that people still read. Sibly revived and commercialized astrology and magic, turning his *Complete Illustration of the Celestial Science of Astrology* into a best-seller: the horoscope that he cast for the birth of a new nation – the United States of America – was timely in the 1780s.

Compared to Rainsford, Sibly, and Taylor, most other occultists of their time are even more obscure today, lacking the celebrity of the few impresarios who dazzled them and their followers: Franz Mesmer, Emanuel Swedenborg, the Chevalier Ramsay, and Count Cagliostro. Patients seeking cures by animal magnetism flocked to Mesmer in Paris, even after scandal had forced him out of Vienna. Swedenborg, who talked with angels and visitors from other planets, attracted Methodist evangelicals whom conventional Anglican piety had disappointed. Swedenborgian churches, like the Methodist kind, still exist, and so do Masonic lodges: Andrew Michael Ramsay, a Jacobite mystic who converted to Catholicism, traced the Craft back to ancient Egypt through crusading knights of the Middle Ages. If Ramsay, Swedenborg, and Mesmer were sincere, more or less, Count Cagliostro – aka Giuseppe Balsamo – was a charlatan from top to bottom. Having escaped to England from Paris after a bungled try at stealing diamonds from Marie Antoinette, he soon saw his new Egyptian Freemasonry exposed as a fake by the London press.[118]

What story are we hearing when Cagliostro, Mesmer, Rainsford, Ramsay, Sibly, Swedenborg, and Taylor need to be in it? A full story about science in the Enlightenment can do without them, but not without Euler, Herschel, or Lavoisier. A complete story about philosophy in that period can ignore them – but not Hume, Kant, or Reid. Likewise, for the centuries just before the Enlightenment, Boyle, Bruno, Campanella, Leibniz, Pomponazzi, and Porta cannot be missing from a comprehensive account of natural philosophy – no more than Descartes, Galileo, Hobbes, Locke, and Newton can be missing. Yet all these earlier

thinkers fought battles about occultism, some of them as advocates of magic. For scientists and philosophers of their stature, such advocacy – or even engagement – was no longer possible once educated Europeans came to think of their culture as Enlightened.

Enlightenment as Kant described it is not illumination as Swedenborg preached it: that illumination is what Kant called *Schwärmerei*, a harsher word than 'enthusiasm.' The distinction is plain to see: daring to understand is not submission, no matter how ecstatic, to "some unalterable doctrine," no matter how ancient and exotic. Now, however, when occultism has long since lost its intellectual authority, we can still see how hard it was for philosophy and science to part ways with magic. The divorce had yet to be settled when Descartes heaped scorn on the scholastics and Leibniz hurled fury at Newton. When Leibniz castigated Newton's gravity by calling it "occult," his words unsettled the mighty physicist in his years of glory. The adjectives that he spat at Newton's spokesman, Samuel Clarke, were even more venomous: "inexplicable, unintelligible, precarious, groundless and unexampled, …a chimerical thing, a scholastic occult quality." Newton got the last word only by outliving Leibniz. Neither broke free of occultism, whose last philosophical episodes they played out together.[119]

PART V

CONCLUSION

CHAPTER FIFTEEN

WHO KILLED DABHOLKAR?

What your paper is to you
the poison oracle is to us.[1]

1 DATA

When Sir Edward Evan Evans-Pritchard was knighted in 1971, his fame was secure as a patriarch of anthropology, of which his *Witchcraft, Oracles and Magic among the Azande* is an enduring monument. Oxford published his book in 1937, seven years after he returned from the last stay in Zandeland on which the book reports. With support from the government of Anglo-Egyptian Sudan, the ruling authority in the region since 1905, he had spent "about twenty months" there – where South Sudan, Uganda, the Republic of the Congo, and the Central African Republic now border one another in the middle of the continent. About a million Zande people live in this area today.[2]

Evans-Pritchard's book, for all its success and influence, is a product of its time and places: it describes the Azande as

> so used to authority that they are docile; that it is unusually easy for Europeans to establish contact with them; that they are hospitable, good natured and almost always cheerful and sociable; that they adapt themselves without undue difficulty to new conditions of life and are always ready to copy the behaviour of those they regard as their superiors in culture and to borrow … new ideas and habits; and that they are unusually intelligent, sophisticated and progressive, offering little opposition to foreign administration and displaying little scorn for foreigners.[3]

What Evans-Pritchard saw in Zande behavior to support his global impression of docility, hospitality, cheerfulness, and eagerness to copy is

hard to know – likewise for seeing few signs of scorn. Although his long book reports on a narrower range of behavior and culture, doubting its accuracy on those very items – witchcraft, oracles, and magic as elements of Zande behavior and culture – is the best place to start. Asking whether the book is accurate is one question. Different questions will ask about authority and influence: the influence is beyond doubt – a fact of history for this famous book – and its authority is still in evidence. After nearly eighty years, Oxford keeps an abridged paperback in print; the back cover praises this "acknowledged masterpiece" and its "contemporary relevance."[4]

Recognizing the influence and authority of *Witchcraft, Oracles and Magic*, while doubting – provisionally – its findings, leaves the book intact as evidence of a certain kind: evidence of relatively recent and still authoritative views about its topics, views based on observation and respecting the ordinary rules of academic judgment. In that spirit, an account of what the book says about witchcraft, oracles, and magic need not endorse it, either as an analysis of those topics generally or as a report on what they were in central Africa nearly a century ago.

Right or wrong, *Witchcraft, Oracles and Magic* is a rich book, loaded with detail. The summary that follows cannot do justice to it and makes no effort to be complete or comprehensive, aiming only to describe Evans-Pritchard's observations as they stand.

Every Zande thinks that some other Azande are witches who can injure him. The injurious witchcraft is in the witch's body, as Evans-Pritchard was told by one of the people he studied, who described the steps taken in the old days to find the witchcraft: "Azande think that the witchcraft is inside a man.... They cut open his belly to search there.... If witchcraft substance was in the belly, they said that the man was a witch.... [The] witchcraft-substance is a round thing in the small intestine" – about halfway between the navel and the base of the throat. Like an appendix, a gall bladder, or an adrenal cortex, this dangerous object grows with the body and functions as part of it – like an organ or part of an organ in an organism.[5]

Witchcraft in one person's body destroys the body of another person by eating the vital organs – or rather the souls of those organs: "the witch sends the soul of his witchcraft to eat the soul of the flesh of a man," in the words of a Zande informant. What harms the victim directly is not the "round thing" in the witch's body – which stays in place – but the soul of that thing. And what this soul injures at first is the soul of a vital organ in the victim. These souls that are agents and objects of

harm are not persons, yet they go between persons. The assault starts from a witch's body to strike a victim's body, but the proximal agent of destruction and the thing it destroys proximally are both 'psychic' – using Evans-Pritchard's term – rather than bodily. The damage mounts as the victim's organ is slowly eaten away, eventually resulting in death.[6]

Witchcraft is violent and evil, but there is nothing uncanny or uncommon about it: witchcraft happens all the time, to everyone, usually without killing. Although witchcraft does not explain every misfortune, it explains many – especially graver misfortunes like death, though not all deaths.[7]

Suppose a building collapses, and a man dies in the collapse. The man was sitting in the shade of the building when its timbers broke – eaten away by termites – and the falling structure crushed his head. The cause of death is a fractured skull, after termites had caused the building to fall: the causality and sequence of events are clear. But this account of the causality has no social purchase or meaning where such meaning is needed: the dead man with a broken skull has been lost to a family and a community. A story about termites, falling timbers, and fatal head trauma is a true story and intelligible but not the whole desired story. The rest of the story is about witchcraft, which explains why just *that* building fell at just *that* moment to kill *that* man. Coincidence, one might say, which is not a story at all. Or perhaps the man had bad luck: a very thin story. Wanting a fuller story, a Zande will ask about witchcraft, seeking a "socially relevant" cause, neither denying nor ignoring other causes nor focusing on them.[8]

Two hunters are tracking an animal. One hunter throws a spear and wounds the animal fatally. But it takes another spear thrown by the second hunter to bring the animal down just when and where it dies. Azande say that witchcraft kills like that – like a second spear.

When the second spear strikes, anger is a typical reaction – but not fear or terror. Misfortunes other than death may just provoke annoyance. Death caused by witchcraft requires compensation, however, and calls for revenge, which is not justified by smaller injuries or inconveniences. Exposing the witch and convincing him to stop will suffice in cases of lesser harm. To identify the attacker and decide how to respond, the Azande consult oracles and witch-doctors. The threat of witchcraft, which can cause serious illness and kill, is real and constant. But fear of witchcraft does not paralyze because remedies – oracles and magic – are just as common as witchcraft and accessible to its victims.[9]

Witch-doctors are specialists in these matters but not very reliable – helpful mainly for preliminary advice. The same is true for some oracles,

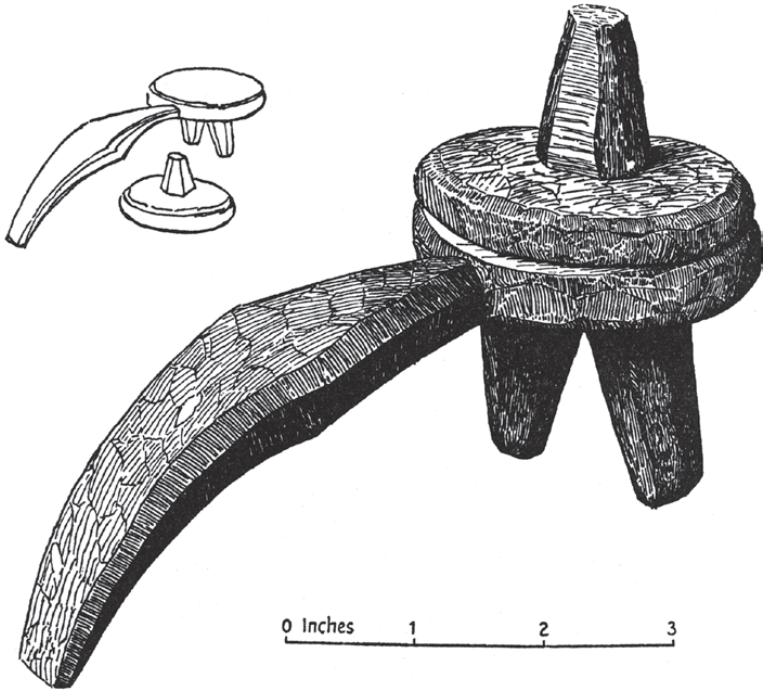


Figure 106. Rubbing-board.
(Evans-Pritchard [1937], p. 362)

which are useful in ordinary situations but not when life and limb are at risk. For the less dangerous decisions that people face every day, the rubbing-board oracle is widely available. Older men carry rubbing-boards with them – ready to respond when day-to-day decisions need to be made. A man who carries a rubbing-board is an expert practitioner who has prepared himself physically and ceremonially with special medicines.[10]

A rubbing-board is portable – smaller than a dinner plate though bulkier – and has two wooden parts: one part is a round table-top supported by two short legs and a longer tail; the other is a round lid that just covers the table-top and has a short handle on top. To consult the rubbing-board, the user sits on the ground with the device in front of him and his foot on the tail to steady it. He pours plant juice and grated wood on the top of the table, wets the bottom of the lid with water, puts the lid on the table, and rubs it across the top. Two outcomes are possible: either the lid slides across the table, or else it sticks. Sticking and sliding are the oracle's responses.[11]

Rubbing-boards are cheap and easy to use. Consulting a poison oracle is a more elaborate affair and more expensive: the requirements are chickens and a special poison that may – or may not – kill them. Every Zande household keeps chickens, but not to eat the birds or their eggs. A typical household will have only six or so. They are too valuable to waste, and the poison that kills them is hard to come by. Since the poison is made from a plant that does not grow in Zande territory, those who gather plants to make it face the expense of a journey; they also risk breaking the European law that forbids crossing the border that must be crossed to find the plants.[12]

To use a poison oracle, Azande go into the forest, hoping to keep the proceedings secret from possible enemies – witches especially – and unpolluted by violations of taboos. Unlike the rubbing-board oracle, which requires a specialist, the poison oracle can be used by any adult male who has the requisite experience and observes the relevant taboos. The people involved (possibly but rarely a single person) have three roles: the *owner* of the poison supplies this valuable substance; the *operator* prepares the poison and feeds it to a bird; the *questioner* addresses the oracle.

The poison, a red powder, is poisonous not by nature but when correctly prepared and ritualized – using our terminology to describe the Zande view. Moreover, the poison swallowed by the bird is the oracle addressed by the questioner: the ingested substance "hears like a person and settles cases like a king." The questions asked of the poison are not formulaic, though the questioner's imagery and rhythms may be familiar, and the import of the questions is always the same: 'if *p*, kill the bird, poison oracle' or 'if *p*, do not kill the bird, poison oracle.' Since the poison's effect varies from bird to bird, and from dose to dose, the oracle's responses vary enough to produce plausible distinctions. Although the questioner speaks to the poison inside the bird, the Azande do not actually regard the poison as a person – no more than the witchcraft inside a witch is a person. Just like witchcraft, the poison works reliably – according to the Azande – yet there is no accounting for it except to refer vaguely to its soul, attributing an *agency* to the poison, which agency is just another face of the poison's *action*.[13]

The poison oracle and other oracles address the social and moral situation when misfortune strikes. Evans-Pritchard summarizes the process for cases of grave misfortune – death in particular: "death evokes the notion of *witchcraft*; *oracles* are consulted to determine the course of vengeance; *magic* is made to attain it."[14]

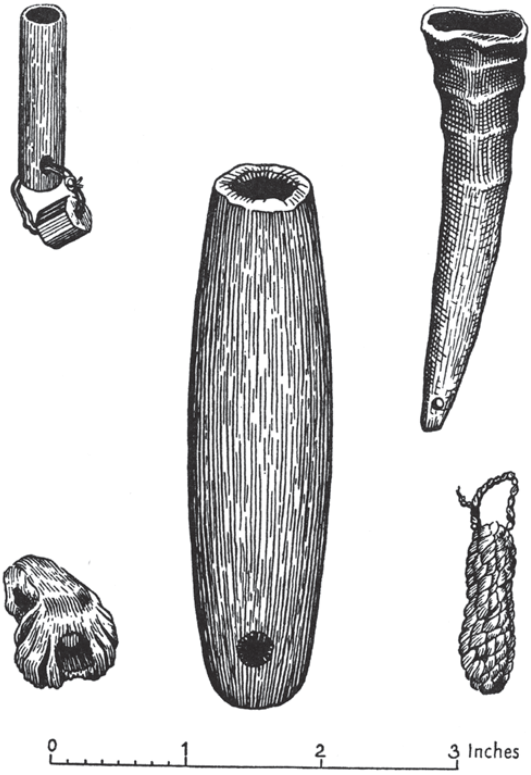


Figure 107. Magic Whistles.
(Evans-Pritchard [1937], p. 408)

Oracles are always good. The witchcraft that oracles expose and diagnose is always bad. The magic that achieves vengeance against witchcraft is usually good, except that sorcery – which resembles magic – is bad.[15] The magic directed against a witch on the advice of an oracle is part of a plant or a tree used as medicine: the medicinal piece of the plant or tree is also magical. Wooden whistles, for example, are medicine and magic, though the wood becomes medicine only when used in the magical way.[16] Just as the operator of a poison oracle talks to the poison that delivers the oracle, the user of a whistle addresses the whistle that aims magic at a witch: "this whistle which I blow, … may it slay in its might all the kin whose homesteads line a stream. O whistle! O whistle! May he cut his foot on a large stump of wood, … and may a deep ulcer form in the wound, and so may he die!"[17]

That whistles work their magic is obvious to the Azande: oracles confirm their effects, whose machinery excites little interest. Using a magic whistle is different from weaving a rug or making a pot, however: a potter or weaver stays in contact with the work and its results, but magic stops a witch who is elsewhere, acting remotely in a way explained only by reference to a soul that actually explains very little – if anything.[18] Ghosts – souls of humans whose bodies have died – can interfere with a poison oracle and help with a new (to the Azande) kind of hunting magic. But ghosts are marginal agents: even in the few relevant cases, "a man addresses the medicines and not the ghosts, for the power is in the medicines." No divine person – no god, demon, or angel – accounts for the power, except in the remote sense that Mbori, the Creator, made everything, including trees and plants used for magic. No theology, cosmology, mythology, or physics explains magic: the salient perspectives are botanical, physiological, psychological, social, and moral.[19]

To summarize: witchcraft starts from the belly of a witch. A poison swallowed by a bird is an oracle; so is an implement made of wood. To counteract witchcraft, the Azande need oracles, and they need magic too: the three constitute a system of beliefs and practices. Like witchcraft and oracles, magic is a natural object or is made from a natural object – an impersonal thing. Although none of these things is a person, all are spoken to and addressed as 'you'. Human persons – as agents or targets of witchcraft, magic, and oracular divination – interact with other human persons. But non-human persons are not much involved – no gods, angels, or demons help with magic or hinder it.

The foregoing account of witchcraft, oracles, and magic – a patchy digest of Evans-Pritchard's big book – is hard to square with the account of magic in *this* book, the book that you're now reading. The author of *this* book, like Evans-Pritchard, is a native speaker of English whose lexicon (like your own) includes 'magic' and related words. Evans-Pritchard says this about such words, saying it to introduce his book and wishing to avoid "futile disputes about words":

> I am mainly concerned with following Zande thought. I have classed under a single heading what Azande call by a single word, and I have distinguished between types of behaviour that they consider different. I am not anxious to define witchcraft, oracles and magic as ideal types of thought, but desire to describe what Azande understand by *mangu, soroka* and *ngua*. … My aim has been to make … English words stand for Zande notions and to use the same term only and always when the same notion is being discussed.

Following those rules, Evans-Pritchard explains that *mangu* is "a material substance in the bodies of certain persons … discovered by autopsy in the dead and … diagnosed by oracles in the living." *Mangu* is both that substance and a "psychic emanation" from it, and "a person whose body contains or is declared … to contain" it is a *boromangu* – a witch. *Soroka* are "techniques … supposed to reveal what cannot be discovered at all or … [not] for certain by experiment and logical inferences," and there are four main types, using poison, a rubbing-board, termites, or sticks. *Ngua* is "a technique …supposed to achieve its purpose by … medicines … [whose use] is a magic rite … usually accompanied by a spell." For these Zande words and several others, Evans-Pritchard supplies "the English words that I use" – 'witchcraft' for *mangu*, 'oracles' for *soroka*, 'magic' for *ngua* – adding that "if any one cares to … [use] terms other than those I have used, I should raise no objection."[20]

A native speaker of English who knows no Zande words will not be surprised to hear that some *soroka* are poison swallowed by birds or even that the poison has a role in divination. The same Anglophone observer will find nothing preposterous about *mangu* in the stomach of a *boromangu* – not even if the *mangu* harms other persons, though the machinery of harm-doing will need explaining. But the same statements using 'oracles' for *soroka* and 'witchcraft' for *mangu* will puzzle an English speaker because the normal sense of 'oracle' excludes reference to ingested poison and the normal sense of 'witchcraft' excludes reference to intestinal organs. And yet Evans-Pritchard, a native speaker of English, uses 'oracle' and 'witchcraft' in just those ways because – within the resources of his native language – he can do no better to describe how Zande speakers use *mangu, soroka*, and *ngua*.

Since Evans-Pritchard's use of 'oracle' and 'witchcraft' is anomalous, he has little reason to object if someone substitutes different English words. His terminology is not arbitrary or nonsensical, however, as it would be if he used 'elevator' for *soroka* or 'uncle' for *mangu*. Once we know a little about the *soroka* that rely on poisoned birds, we can see something oracular about them, and likewise for the witchiness of *mangu* – though in both cases the English nomenclature may seem to be a stretch or even bizarre. The oddness is striking when *ngua* turns into 'magic.'

Evans-Pritchard explains that "*ngua* means 'tree' or 'wood' or 'plant'" and that *ngua* is also the word that he has "translated as 'medicine' or 'magic,' according to the context." Accordingly, by saying the very same Zande words, he might either ask a Zande what magic he is using or ask what plant he has chosen or ask both questions at once. The same

equivocation is possible, more or less, in English or Latin or Greek: pointing to a peony root and a rhubarb leaf, and using any of those languages, one might ask 'which is your power?' And the power will be both botanical and magical. Yet it is remarkable – from an Anglophone perspective – that Azande use exactly the same word for 'tree,' 'wood,' 'plant,' 'medicine,' and 'magic,' and that some of the items named can be spoken to with effect. Such conversations are not normal in English, Latin, or Greek accounts of magic. In the West, etymological inquiry about 'magic' leads to a tribe in ancient Persia. In Zandeland, it leads to trees and plants in the forest.[21]

Evans-Pritchard's response to these facts about words and what they stand for is exemplary: he declines to define "witchcraft, oracles and magic as ideal types of thought," and so do I – as a student of magic in Western culture. The descriptions that he attaches to those English words are not definitions. They are accounts, sometimes in great detail, of what he saw – or had reported to him – when Azande were doing what they called *mangu, soroka*, and *ngua*. Definitions of 'magic,' 'witchcraft,' and 'oracles' are not in order. Those English words are not names – according to Evans-Pritchard – of "ideal types," as they might be if magic, witchcraft, and oracles were bearers of definitions, as a triangle, a tricycle, or perhaps a trilobite is the bearer of a definition. Evans-Pritchard abstains from defining his terms. The words in question "are only labels which help us to sort out the facts.... If the labels do not prove helpful we can discard them. The facts will be the same without their labels."[22]

This austere nominalism is not a license to ignore philology and history. The genealogy of *mageia, magia*, and their congeners in Western languages is indispensable for knowing what our Western ancestors had in mind when they talked and wrote about what we now call 'magic.' But that knowledge is empirical, and its expression is descriptive: since no essences are available, no definitions will be possible. That was Evans-Pritchard's view – and it is mine.

Around 1930, when Evans-Pritchard left Zandeland, Ludwig Wittgenstein discovered a different "account of the magical and religious notions of men" that stayed with him – perhaps until just before he died in 1951. He found *The Golden Bough* after returning from Vienna to Cambridge, where Frazer – though he also had rooms in Trinity College – was no longer in residence. Maybe the attraction of Frazer's book for Wittgenstein was entertainment: many have been dazzled by it. But Wittgenstein finds the book's account of magic and religion "unsatisfactory" – to say the least. "Frazer is much more savage than most of his

savages," he snarls, "for these savages will not be so far from any understanding of spiritual matters. … His explanations of the primitive observances are much cruder than the sense of the observances themselves."[23]

Wittgenstein's writings – only two books completed – mix agonizing caution with proclamations like "the logical picture of facts is the thought" and aphorisms like "whereof one cannot speak, thereof one must be silent." Silence was not Frazer's way. If the ceaseless noise of *The Golden Bough* attracted the author of the *Tractatus*, it may have disgusted him too. At one point, nonetheless, he thought that "the right thing would be to begin my book with remarks about metaphysics as a kind of magic." Had Wittgenstein not discarded that impulse, the *Investigations* might have opened with a passage from *The Golden Bough* and not with Augustine's *Confessions*.[24]

Frazer's procedure was to collect the data – not just mountains of it, but continents – then classify in order to universalize. Evans-Pritchard's method – on a smaller scale and up to a point – was similar: he collected data about the Azande and then classified some of it as 'witchcraft,' 'oracles,' and 'magic' in distinct but interacting categories. In "an ad hoc classification for descriptive purposes," the categories are disposable, however, like the labels that name them: Evans-Pritchard had none of Frazer's zeal for universals.[25]

Frazer takes some of his data from newspaper stories: from Scotland, sticking pins in a parson's image in order to kill him; from Russia, rendering human fat to make candles for catching thieves; from Ireland, burning a girl as a witch. The daily news persuades him once again of "the uniformity, the universality, and the permanence of belief in magic" and of the contrast with religion, whose hallmarks are "endless variety and … [a] shifting character." The historical or evolutionary upshot of this opposition is Frazer's "surmise" that "an Age of Religion has … everywhere … been preceded by an Age of Magic." The diffidence is just polite: Frazer's message is that progress from magic to religion (and then to science) is a *law* of cultural development. Magic, as a component of that law, is "everywhere and at all times substantially alike in its principles and practice."[26]

"The radical conflict of principle between magic and religion" indicates that both rely on principles, even though religion's principles – or perhaps their derivatives – are variable. Since people fight about religion all the time, "to frame a definition of it which would satisfy every one must obviously be impossible." In that light, maybe what Frazer says about religion is something less than a definition or maybe just a working definition – like Evans-Pritchard's "labels." Religion, he writes, is

> a propitiation or conciliation of powers superior to man which are believed to direct and control the course of nature and human life. Thus defined . . . –

so there is a definition after all, provisional perhaps? –

> ...Thus defined, religion consists of two elements, a theoretical and a practical, namely, a belief in powers higher than man and an attempt to propitiate or please them.... Belief clearly comes first, since we must believe in ... a divine being before we can attempt to please him. But unless the belief leads to a corresponding practice, it is not a religion but merely a theology; in the language of St. James, 'faith, if it hath not works, is dead, being alone.'[27]

In the space of a few lines, Frazer's worldwide quest to understand religion takes him back home, to the early Christian document that Luther called "an epistle of straw." If Evans-Pritchard is right, and "the purpose of *The Golden Bough* was to discredit revealed religion," the lure of the Bible – as a target – will have been strong for Frazer. But his project is not parochial. His evidence for the magic that religion hates is altogether ecumenical and diachronic. And his cases of magic "are *all* mistaken applications of one or other of two great fundamental laws of thought, namely, the association of ideas by similarity and the association of ideas by continuity." Always and everywhere, magic "is a mistaken association of ideas."[28]

Ideas, laws, principles, and definitions are philosophical issues, as Frazer knows, being an heir in the British tradition of David Hume's principles of association, which are "resemblance, contiguity in time or place and cause or effect." Hume's "principles of union among ideas" are the psychological analog of gravity, supplying "a kind of attraction, which in the mental world will be found to have as extraordinary effects as in the natural."[29] "It is for the philosophic student," Frazer concludes, "to trace the train of thought which underlies the magician's practice, ... to disengage the abstract principles from their concrete applications, ... to discern the spurious science behind the bastard art." The main abstractions are two, and they are laws as well: "first, that like produces like, or that an effect resembles its cause; and, second, that things which have once been in contact with each other continue to act on each other at a distance." One is "the Law of Similarity," the other is "the Law of Contact or Contagion." These "two great principles" of "the magician's logic ... turn out to be ... misapplications of the association of ideas."[30]

The principles and laws "are certainly not formulated in so many words nor even conceived in the abstract by the savage." Since abstracting is a philosopher's task, the magician will not have the tools to analyze his own logic or reflect on it. The logic, laws, and principles "are nevertheless implicitly believed by him to regulate the course of nature." The implicit belief is false but systematic. Frazer gives "the general name of magic to the whole erroneous system, both theoretical and practical." Theory and practice are the two main divisions of the system: the practice is "magic as a pseudo-art"; the theory is "magic as a pseudo-science."[31]

Wittgenstein says that he "must neither speak in defence of magic nor ridicule it" in order to keep "what it is that is deep about magic." He objects to Frazer's account of magic and religion because "it makes these notions appear as mistakes," insisting that none of the shamans and sorcerers whom Frazer describes "was making a mistake except where he was putting forward a theory." Does Wittgenstein mean that Frazer was half-right – about "magic as a pseudo-science," though not about the "pseudo-art"? Probably not, though any guess about Wittgenstein's intent will be just that – a guess. The *Remarks on Frazer's Golden Bough* is a very slim volume of unfinished thoughts that give us little to go on. What the *Remarks* say is that calling some magical notion a 'mistake' is like finding "Augustine mistaken … when he called on God on every page of the *Confessions*."[32]

Augustine called on God in sentences of praise and pleading that have no doxastic content: their form is not propositional, only propositions can be true or false, beliefs need to be true or false, so prayers of petition and praise cannot be beliefs. However, some prayers are creeds – "I believe in God, the Father almighty" and so on – that state beliefs. And addressing the Father "who art in heaven" may allude to a creed, if it does not just extend the name 'Father.' "Hallowed be thy name" gives praise and makes a wish, but does not state a belief, though only a God believed to be holy can have a hallowed name. "Give us this day our daily bread" makes a plea. "Forgive us our sins" is also a plea – for mercy. What motivates a plea to God or inspires shouts of praise may be a theory about God, but those utterances as such cannot state a theory because they lack doxastic content: pleading and praising, as such, give no opinion.

As Wittgenstein writes, "what makes the character of ritual action is not any view or opinion, whether right or wrong, although an opinion – a belief – itself can be ritualistic, or belong to a rite." Not all magic is always ritualized – sometimes a *ngua* is just a *ngua* – but all ritual is practiced. If Wittgenstein is worried just about the theoretical side of Frazer's theory/

practice opposition, why make this point about opinion and ritual? The *Remarks* are too skimpy to bear such questions. One possibility is that Wittgenstein is thinking about the whole enterprise of magic – not just theories of magic – when he absolves it all of mistakes and – implicitly – writes it off as being incapable of mistakes. Magic, on this view, is just not where one finds incorrect or correct opinions – except when people are "putting forward a theory" that is marginal to the real business.[33]

Nothing is clearer about the *Remarks* than its terse incompleteness: the likeliest misreading is to make too much of some part of it. When this disorderly pamphlet protests about the "narrowness of spiritual life we find in Frazer" and his inability to "imagine a priest who is not basically an English parson," the outbursts recorded for posterity were momentary for Wittgenstein and perhaps not strongly held. He might also have come to revise his distinction "between magical operations and those operations which rest on … a false picture, a picture that doesn't fit," illustrated by an "illness … moving from one part of the body into another." That picture is common enough: metastasis, septicemia, and so on. What makes it not fit? Hard to say.

Not so hard to reject is this claim: "the characteristic feature of primitive man, I believe, is that he does not act from opinions he holds about things (as Frazer thinks)." Wittgenstein has beliefs (*Glauben*), but the actions of a "primitive man" are not based on opinions (*Meinungen*). How could that be, and how many 'primitive' people had the philosopher met? Judging them summarily – whoever they were – at so great a distance, he reaches a conclusion even less plausible than Evans-Pritchard's facile report on Zande docility. Much of the relevant information came from Frazer's book, which Wittgenstein misunderstands on this point. If '*holding* an opinion' entails being *aware* of it – sooner or later – Frazer did not ascribe opinions about the basics of magic to his witnesses. The magician's logic is only "implicitly believed, … not formulated nor even conceived in the abstract by the savage."[34]

Not so for the magic and magicians described by *this* book – thinkers and doers whose behavior contradicts another of Wittgenstein's findings: "simple though it may sound, we can express the difference between science and magic if we say that in science there is progress, but not in magic. There is nothing in magic to show the direction of any development."[35]

The history of magic in Western culture may not be a tale of progress (*Fortschritt*), but it is surely a story of development (*Entwicklung*). The barest sketch of its direction (*Richtung*) is this:

In late antiquity, Plotinus and his successors inherited their physics and metaphysics from Plato, Aristotle, and the Stoics; they synthesized that inheritance to assemble a theory of magic. The theory matched the prevailing cosmology and also responded to ordinary experience – both vicarious and direct – of certain puzzling facts of nature. Early Christians, seeing those strange facts in the same way, more or less, found the theory compatible with their new religion. Medieval Christians, faced with the same odd phenomena, shifted the burden of explaining them to Aristotle. Then, when Ficino revived Plato, Plotinus, and Proclus, he and others were inspired to philosophize about magic in a different way. Part of their inspiration was a theory of history – the ancient theology – that gave Platonic wisdom a sacred pedigree. Until it was debunked by philology, the ancient theology sustained magic genealogically, while scholastic, eclectic Aristotelianism sustained it philosophically, until that philosophy also became unbelievable – and many of the facts lost their magic. Once that happened, magic was no longer respectable for European intellectuals.

That story about magic – meaning the *mageia* of ancient Greece, the *magia* of Rome and medieval Europe, the *magie, magick*, and *Zauberei* of early modern Europe – has development and direction. To think about *mageia* and other Western magics, the best method I can offer is to emulate Evans-Pritchard's handling of *ngua*: I abstain from defining it as an ideal type, having no grand theory of magic to offer. Hence, a universalizing account with ambitions like Frazer's will not fit the story. On the other hand, a story that bypasses theory, on Wittgenstein's advice, will not fit the evidence. My story is about theories, data, and a genealogy. And that story tells the tale, I hope.

2 A CRIME WITHOUT A NAME

Marcel Mauss would not have been happy with my story. At the turn of the twentieth century, he and Henri Hubert published an *Esquisse d'une théorie générale de la magie*. Perhaps the publisher of the English version of 1972 was worried about marketing a 'sketch' (*esquisse*) since the translated book was billed simply as *A General Theory of Magic* – a troublesome title for David Pocock, a British anthropologist who supplied a new English "Foreword." Pocock finds the book important because it undermines any such theory, leading to "the dissolution of 'magic' as a category" – even though "Mauss certainly had no such … demolition in mind." (Pocock ignores Hubert's role in the book.)

Dissolving and demolishing were low on the agenda for prophets of social science like Durkheim, Frazer, Mauss, and Weber at the turn of the twentieth century: the book aims "not only to define words but to set up natural classes of facts." Meaning to carve nature – human nature, anyhow – at the joints, the project hopes "to enumerate fully the different categories of magical facts." The first result falls short, however – just "a provisionally adequate definition of magic phenomena" that turns out to be not only provisional but also negative and confined to ritual; namely, that "a magical rite is any rite which does not play a part in organized cults." No ritual, no magic. And the ritual cannot be part of something "organized."[36]

On that account, any march toward a general theory of magic would be slowed by older evidence of the relevant phenomena – passages from a penitential manual written in the eleventh century, for example, to show priests how to question sinners. The manual, called the *Corrector*, became notorious for describing a thought-crime in words eventually used to justify killing people charged with that crime – though the *Corrector* itself calls the crime imaginary. The sin called out by the *Corrector* is a false belief – perhaps stimulated by fantasies of night-flight, ritual cannibalism, vampire feasts, and defiled corpses. The manual's question for female sinners is this:

> Have you *believed* that some woman can do what certain women, deceived by the Devil, claim they must do, of necessity and by his command – to wit, that on certain nights, along with a mob of demons transformed to look like women … , she must ride on various animals and be counted in their assembly? If you have shared in this superstition, you must do penance for one year… Have you *believed* … that as you lay restless in your bed in the silence of night, with your husband curled up next to you, you can go out while the doors are closed and you are still in your body, able to cross great stretches of land along with other women taken in by the same illusion of killing people …, yet not using any weapons that can be seen, and then eating their cooked flesh and putting straw or wood or some such thing where their hearts should be, and after eating you bring them back to life again and let them live for a while? If you have *believed* this, you shall do penance on bread and water for forty days, and for the next seven years.

The deluded believers think they are summoned to an "assembly," a gathering with ritual purposes, perhaps – ritual being the essence of magic, according to Hubert and Mauss. And if the assembly were just

fly-by-night, its worship could not be properly "organized"– as in a church, for example – again meeting the standards of the same theory.

But the bishop who wrote the *Corrector*, speaking officially in legal language, identifies "superstition" as the sin to be confessed, not 'magic' or even 'witchcraft.' And this superstition is a *belief*, not an *act*, and thus not a *ritual*. However, the bishop's opening sentence in the same section of the *Corrector* condemns an act, though that act is also not explicitly a ritual. It is *magical*, however. "Have you consulted magicians and brought them into your house," the manual asks, "to find something by the art of sorcery?" The sin is calling in a magician or a sorcerer, whose role (a traditional one) in this situation is to find lost household goods – an act but not a rite as the *Corrector* describes it. The writer is a bishop, a high church official managing a large organization: organizing the authentic rites, the true and holy sacraments, is the bishop's job. He must also ban rites that are not authentic. If a sinful act of magic were a bogus ritual, who better than a bishop to spot it, name it, and root it out?[37]

The theory of Hubert and Mauss sticks on such puzzles, which are everywhere in the learned literature on magic: many global theories, much local evidence that escapes them. Speaking of this theory in particular, Pocock's view – unlike mine – reflects anthropological obligations to "other cultures": any theory about such cultures must be discarded, he maintains, if its "categorical distinctions" are untrue to "the intellectual universes of other cultures," and he takes "'magic' to be one such category." Though Pocock and other anthropologists have much to teach, my aims are historical and philosophical, not anthropological. As a matter of history, for the stretch of history where Western Europe's recorded past supplies the data, *theories* of magic are very much in evidence – despite the absence of any *single theory* of magic "everywhere and at all times"– and those plural theories are partly philosophical.[38]

The theories theorize about what? The evidence for them comes from many miscellaneous cases, from many different places and times, leaving any short answer stranded in abstraction – to the point of bafflement. The theories posit *agents*, their *acts*, and *agencies* to make the agents capable of those acts. The agents – agents of magic – are *persons* or *things*. The persons are *human* and *non-human*: the non-human persons are demons, angels, gods, and God. (God enters if miracles are magic sanctioned by a religion.) The things are anything else in the world that is not a person. The relevant acts of the agents, most of whose acts are not relevant, are *unusual*, surprising, out of the ordinary – challenging or defying explanation. Accounts of agencies take up the challenge: by some agencies the

agents *attract* or *repel* one another; some agencies are *organic bonds* between agents seen as organs of a larger organism; other such *mediating* agencies are celestial influence, cosmic harmony, structural resonance, pervading spirit, and so on.

Theories put so broadly will differ on the basics. Plotinus theorizes about spiritual persons as agents of magic, for example, and so does Ficino, interpreting Plotinus. Gods as agents of magic are demeaned by the magic they do – according to Plotinus – because the magic is defiled by matter: magic degrades the gods who bother with it. Just the reverse for Ficino: magic done by pagan gods is desacralized because the Christian religion demotes those gods to demons, who are not evil by nature but whose every magical act is evil. For Plotinus, magic debases some of the gods; for Ficino, some of the gods debase magic.

Reversing the moral polarity in this way is a large theoretical turn: morally, Plotinus and Ficino have not just different but opposed theories of magic, whose physical and metaphysical elements are generally the same – yet not always the same in detail. Intermediary spirit is indispensable for Ficino, but not for Plotinus. At other moments of the Western tradition, disagreements about the basics of magic have gone deep in other ways. To account for magical transmutations, one magus starts with three alchemical elements, another with Aristotle's four elements. Ficino's cosmology is geocentric; Bruno's is polycentric. Agrippa's metaphysics is hylemorphic; Bacon repudiates hylemorphism in order to reform magic.

Since basic beliefs about magic have varied, what students of past magic find in the West is a plurality of theories constructed to make many varieties of belief coherent – beliefs related in multitudinous ways to practices. In the many cultures outside the West, what should we expect to find but more and more of the manifold in theory and practice? And what about the process of finding: if the search starts with 'magic,' 'religion,' and so on, which are names of Western categories, can the results apply always and everywhere? The epistemic and procedural barriers to a grand theory of magic seem insurmountable. But suppose a sorcerer's apprentice could sweep those hurdles away. What about the facts themselves, the immense manifold of data about theories and practices?

A general theory of Western magic – just one type of magic – that accounts for all its facts will be abstract and will lose touch with the data: even worse for a general theory of *all* the magics. Something like that was Pocock's reason for thinking that Mauss's quest for a grand theory was doomed. When Pocock was writing, a mighty name among

anthropologists was Claude Lévi-Strauss, who theorized about many problems, including *mana* – a word used by Polynesians for a kind of power that anthropologists had often linked with magic. According to Pocock, Lévi-Strauss sees *mana* "as pure symbol or as having zero symbolic value." *Mana*, in the words of the master, "is empty of meaning [and] …therefore susceptible … to any meaning whatsoever," which – in Pocock's words – "does not dissolve the concept 'magic' so much as … cut the ground from beneath it."[39]

Lévi-Strauss studied Amerindian myths from the top of the Western hemisphere to the bottom, making his way through thousands of entrancing stories and carrying his readers with him. At the end of it all, the message of his tales about jaguars, ravens, coyotes, and their companions turns out to be Hegelian. Triads are the universal solvent when they are finally 'mediated': "mythical thought always progresses from … oppositions toward their resolution" as "two opposite terms with no intermediary … [are] replaced by two equivalent terms which admit of a third one as a mediator," producing "a new triad." That's very nice, a cynic might say, but people need to make a living. What provokes cynicism is the imponderable grandeur of the claim. Is it profound or banal or vacuous or unintelligible or all of that, and who cares? If grand theory goes down that road, who will want to follow?[40]

According to Pocock, magic dissolves as the topic of any theory like Mauss's because Lévi-Strauss – a follower of Mauss who parlayed his views on gift-exchange into something much bigger – has shown the concepts used by such theories to be always empty, without content. For different reasons, I sympathize with Pocock in doubting that a grand theory of all the magics is possible. But I also reach different conclusions – presented by this book – about magical beliefs and practices in Western culture: about *that* magic there are stories to tell, about theories and data and a genealogy.

The stories go on, carried around the world for the last few centuries by soldiers, missionaries, administrators, and researchers who have found themselves in faraway places with home-grown ideas about 'magic' and its cousins in the West. The *New York Times* reported a recent episode on August 25, 2013, under this headline:

Battling Superstition, Indian Paid with His Life

Ellen Barry, who wrote the story, had been bureau chief for the *Times* in Moscow and won a Pulitzer in 2011 for her reporting on the Russian court system. Her story about "battling superstition" centers on west

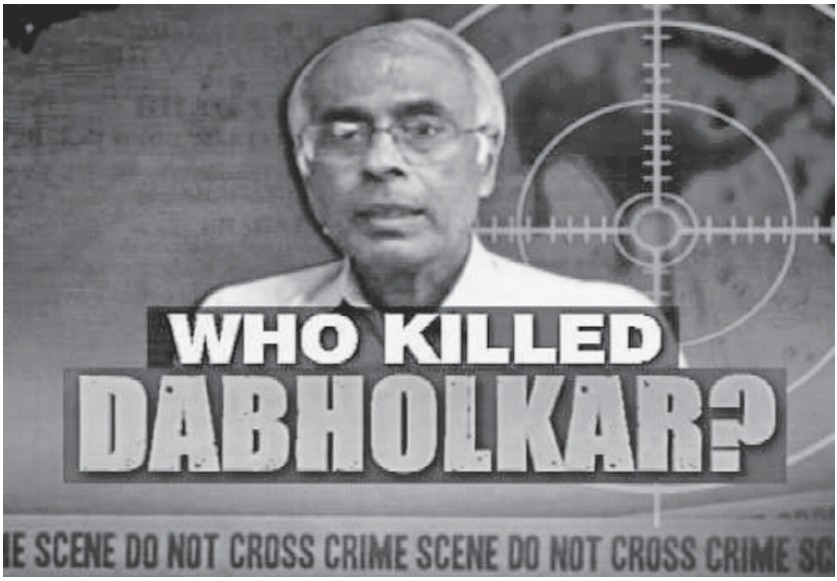


Figure 108. Who Killed Dabholkar?
(Deepika Amane from CNN-IBN)

central India and "an earnest man named Narendra Dabholkar," whose "personal war against the spirit world" ended a few days before she wrote when "two men ran up behind Dr. Dabholkar, 67, as he crossed a bridge, shot him at point-blank range, then jumped onto a motorbike and disappeared." Dr. Dabholkar had made enemies. "If a holy man had electrified the public with his miracles," Barry writes, this

> former physician would duplicate the miracles and explain, step by step, how they were performed. If a sorcerer had amassed a fortune treating infertility, he would arrange a sting operation to unmask the man as a fraud. His goal was to drive a scientist's skepticism into the heart of India, a country still teeming with gurus, babas, astrologers, godmen and other mystical entrepreneurs.

After the shooting, the governor of the state of Maharashtra "signed the so-called anti-black magic bill." The legislation – officially titled the "Maharashtra Eradication of Black Magic, Evil and Aghori Practices Bill" – had been stalled for years, frustrating Dr. Dabholkar because "politicians were slow to embrace it." According to a sociologist at the University of Pune, the resulting legislation is now "much mellowed-down." As Barry describes the fate of the "vaguely worded"

act, its catalog of "banned activities grew shorter and shorter over the years" as legislators found it hard to come up with a "legal definition of superstition." Nonetheless, the enacted bill – following Dr. Dabholkar's murder – makes it illegal to perform "magical rites in the name of supernatural power" and to do "so-called black magic." "So-called": the law chokes on the words that say what it prohibits. Magic is a crime that dare not speak its name.[41]

NOTES

1. THE SCRUPLES OF J. G. FRAZER

1 Wittgenstein (1979), p. 8.
2 Paus. 6.20.15–19; Pausanias (1898) is the translation and commentary by J.G. Frazer.
3 Pausanias (1979) is a contemporary translation; see also the studies by Habicht (1985) and Arafat (1996).
4 Gager (1992), pp. 3–30, 53–6; Dickie (2001), p. 293.
5 Marlowe, *Faustus*, 5.77.
6 Mark 11:12–24; James 3:10.
7 Gager (1992), pp. 13–14; Faraone (1999), pp. 132–8.
8 Gager (1992), pp. 42–6, 78–83, 116–22, 151–4, 175–8; n. 2 of this chapter; for transubstantiation, see also Chapters 4.5, 14.7, the cover illustration, and Figure 100.
9 Dickie (2001), p. 230.
10 This chapter, n. 1.
11 Mark 1:23; Matt. 12:43; Luke 7:21; Acts 19:12–19.
12 Gager (1992), pp. 24–5; Dickie (2001), pp. 18–27, citing Leach (1982), p. 18; see also Graf (1997), pp. 12–19; Janowitz (2001), pp. 3–5.
13 On the emic/etic distinction, see Chapter 2.3–5 of this book.
14 Frazer (1922), the abridgment made by the author and still in print; Lang (1901); Malinowski (1925); for the complex publishing history of *The Golden Bough*, see the brilliant study by Ackerman (1987), especially pp. 57, 98, 109, 165, 238–9, 289.
15 On Frazer's career I follow Ackerman (1987).
16 Ackerman (1987), p. 57.
17 Verg. *A* 6. 124–48; Frazer (1922), p. 3.
18 Frazer (1922), p. 10.
19 Ackerman (1987), pp. 238–9, 289.
20 Pausanias (1898); Ackerman (1987), pp. 55–8, 111.

21 Frazer to Henry Jackson, Aug. 22, 1888, in Ackerman (1987), pp. 87–9.
22 Frazer to W. Baldwin Spencer, 1898, in Spencer (1931), pp. 41–2; Ackerman (1987), pp. 156–9.
23 This account of Frazer's work relies on Ackerman (1987), pp. 158, 166, and throughout; see also Chapter 15 of this book for David Hume's principles of association.
24 Ackerman (1987), pp. 114–16.
25 Browning (1997), pp. 283–7: the grammarian, alive only in his mind, gave up everything else to master intricate rules like those governing the Greek conjunction *hoti* (ὅτι) and the particles *de* (δέ) and *oun* (οὖν). Dennistoun (1996), first published in 1934, takes 660 pages to describe 82 particles: just one of them, *men* (μέν) and its combinations – in emphatic, adversative, introductory, and other uses – fills 56 pages.
26 James (1920), II, 139–40; Ackerman (1987), pp. 174–5.
27 Momigliano (1994), pp. 179–88, 273–5; Traill (1995).
28 Pausanias (1898), II, 528–9; Ackerman (1987), pp. 132–7.
29 Wilamowitz (1955), I, 10; Eitrem (1991), pp. 175–6.
30 Berthelot (1885); Betz (1986), pp. xliii–xliv; Bidez (1913); Bidez and Cumont (1938); Bouché-Leclercq (1879), (1899); Boll, Bezold, and Gundel (1926); Cumont (1912); Hopfner (1921–4); Nock (1925), (1972); Preisendanz (1928–31); Röhr (1923); Ruska (1924).
31 Smith (1978); for the controversy about the Gospel of Mark, Brown (2005) is one place to start.
32 Frazer to Henry Jackson, April 11, 1904, in Ackerman (1987), pp. 188–9.
33 Evans-Pritchard (1937); Chapter 15, this volume, discusses Evans-Pritchard's work on magic in Africa.
34 Wilamowitz (1901), pp. 254–5; "Introduction," in Betz (1986), pp. xliii–iv, li.
35 Betz (1986), pp. xi–xxii.
36 *PGM* 7.490–504, in Betz (1986), p. 131 (translated by Morton Smith).
37 Burckhardt (1989), pp. 514–15.
38 Burckhardt (1989), pp. 514–15.
39 Yates (1964).
40 Frazer (1922), p. 13.
41 Yates (1975), (1979).
42 Thorndike (1923–58); this chapter, n. 30.
43 Thorndike (1923–58), I, 5.
44 Sarton (1950), p. 374; Thorndike (1957).
45 Neugebauer (1951), p. 111.
46 Neugebauer (1951), p. 111.
47 Eliot (1971), p. 50; Yates (1925), (1929), (1931), (1934), (1936), (1964), pp. ix–x; Jones (2008) is a biography of Yates; Trapp (1982), published by the Institute as a memorial, contains a bibliography.
48 Walker (1958); Yates (1938–9).

49 Copenhaver (2000a), pp. viii–x; the only extended discussions of Hermetic texts in Walker (2000) are on pp. 40–4 and 64–72; neither deals with the Greek treatises translated by Ficino. The first describes a passage from the Latin *Asclepius* on "pagan idolatry and demons" to which Ficino reacts – as Walker writes – with "a worried and muddled defence of his own magic." The second is about Lodovico Lazzarelli, whom Ficino seems not to have known.

2. MAGIC AS A CLASSICAL TRADITION AND ITS PHILOSOPHICAL FOUNDATIONS

1 Xenoph. frg. 22.
2 Xenoph. frg. 22; Tylor (1871); Chapter 1.2 of this book.
3 Hdt. 1.101.1; Xenophanes (1992), pp. 30–1, 71–3, 89–119, with Lesher's commentary.
4 Hdt. 1.107.1, 108.2, 128.2, 132.3, 140; 3.61–4, 67.2, 75–9; 7.19, 37.2-3, 43, 113.2, 191.2.
5 Hdt. 3.61–80; Boyce (1989–91), I, 10–11, II, 85.
6 Boyce (1989–91), I, 3–4, II, 1, 9, 41–3, 113, 141–8, 179–83, 213–16; (1992), pp. 27–30.
7 Plin. *Nat*. 30.3–4; Boyce (1984), pp. 12–15; (1989–91), III, 491–511; (1992), pp. 1–21.
8 Diog. Laert. 1 pr. 6; Boyce (1984), pp. 57–9, 105; (1989–91), III, 363–5, 520–1; (1992), pp. 101–4, 127–31, 135, 138, 141.
9 Pl. 1*Alc*. 122A; Arist. frg. 6 (R3); Str. 15.3.1, 7. 13–15, 19–20; Curt. 3.3.9-12, 5.1.22; Dio Chrys. *Or*. 36.39–41, 49.7; Plut. *De Is. et Os*. 369D-70C; Arr. *Anab*. 6.29.7-11; Paus. 5.27.3; Diog. Laert., 1 pr. 8–9; Bidez and Cumont (1938); West (1971), pp. 203–42; Boyce (1989–91), III, 59, 294–7, 539–48; (1992), pp. 129–33.
10 Plin. *Nat*. 30.8–11; Diog. Laert. 1 pr. 6–9; Boyce (1989–91), III, 329–30, 344–9, 487–8, 507, 511, 520–1, 553–64; Cumont (1902), pp. 150–8; cf. Ulansey (1989), pp. 3–14, 18–19, 37–9; Clauss (2000), pp. 131–40.
11 Matt. 2:1–18.
12 Acts 8:4–25 for Simon Magus, and for magic and miracles Matt. 12:22–8; Mark 5:1–42, 6:45–56, 9:38–40, 11:12–24, 13:1–23; John 9: 1–17, 11:1–48; Acts 9:32–42, 14:18–20, 16:16–32; Ephes. 1:15–23; Clauss (2000), p. 169.
13 Num. 22:2–24:17 for Balaam; Acts 7:22 for Moses; also Exod. 7:1–8:15, 14:5–31, 22:17–19, 28:3–30; Deut. 4:15–20, 18:9–21; 1Sam. 28; 1Kings 22:1–38; 2Kings 21:1–15; Tobit 4–6; Plin. *Nat*. 30.11; Hull (1974), pp. 37–57; Smith (1978), pp. 140–52; Kee (1983), pp. 286–9; (1986), pp. 3, 112–27; Cotter (1999), pp. 1–5, 175–8; Chapter 1.3 of this book.
14 Boyce (1989–91), III, 514–15; Chapters 1 and 15 of this book.

15 Aesch. *Pers*. 187, 252, 255, 317, 337, 391, 423, 434, 475, 635, 798, 844; Hall (1989), pp. 5–11, 17–19, 57–8, 69–84.
16 Aesch. *Pers*. 345–7, 599–622; Hall (1989), pp. 86–93; Boyce (1989–91), III, 518.
17 Hdt. 1.101, 132.3; 3.61, 67.2; 7.19, 37.2–3, 43, 113.2, 191.2; Heraclit. frg. 14; Pl. 1*Alc*. 122A, *Resp*. 364B, 572E; Xen. *Cyr*. 8.1.23–4, 3.11, 24–5; Soph. *OT* 387; Graf (1997), pp. 20–4.
18 Hipp. *Morb. sacr.* 2 (140), 3 (144, 146), 21 (182); Empedocles (1995), pp. 258–67, 270–9, 282–3; Eurip. *IT* 1338; Lloyd (1979), pp. 10–58; Kingsley (1995), pp. 217–32; Graf (1997), pp. 24–35.
19 Sen. *Q Nat*. 4.7.2; Plin. *Nat*. 28.17–18; Graf (1997), pp. 41–9, 56–60; Cambiano (1999), pp. 596–9; Hankinson (1999), pp. 534–7; Wardle (2006), pp. 1–44.
20 Cic. *Leg*. 2.26, *Div*. 1.91; Catull. 90; Cohn (1975), pp. 99–102; Graf (1997), pp. 36–41, 54–6.
21 Plin. *Nat*. 30.1; Graf (1997), pp. 49–60.
22 Plin. *Nat*. 30.2-13; Chapters 6, 12.1–2, 4, 14.1–2 of this book.
23 Apul. *Apol*.; Graf (1997), pp. 65–88.
24 Porph. *Plot*. 10; Wallis (1972), pp. 70–2, 104–7; Smith (1974), pp. 122–41; (2004), pp. 77–83; Edwards (2000), pp. 18–21; Chapter 3 of this book.
25 Dodds in Proclus (1963), pp. 187–276; Smith (1974), pp. 83–121; (2004), pp. 83–9; Shaw (1995), pp. 70–178; Siorvanes (1996), pp. 121–33, 140–8, 167–75, 183–99; Clarke, Dillon, and Hershbell in Iamblichus (2003), pp. xiii–lii; Chapters 4 and 5 of this book.
26 Exod. 22:18; Trevor-Roper (1956), pp. 90–93; Cohn (1975); Pagels (1988), (1995); Kelly (2006); Chapter 5.3 of this book.
27 Lewis (1967), pp. 92–121; Dicks (1970), pp. 9–26, 190–219; Grant (1994), pp. 106–22, 526–48, 567–617; Wright (1995); Brague (2003), pp. 85–105.
28 Aug. *Doctr. chr.* 4.30–45; Aquinas, *SCG* 3.104–7; McAllister (1939); Litt (1963); Chapter 6 of this book.
29 Tillotson (1714), p. 312; Trevor-Roper (1956), pp. 90–115; *OED*, s.v.; Chapters 4.5, 12.1, 13.1, 14.1, 5–6 of this book.
30 Harris (1976).
31 Harrison (1963), pp. 75–6.
32 Chapters 1.2 and 15 of this book.
33 *Asclep.* 23–4, 37–8, in Copenhaver (1992a), pp. xxxviii, 62, 80–1, 89–90, 208, 236–41, 254–7; Kaske in Ficino (1989), pp. 6–12; Chapter 11 of this book.
34 Copenhaver (2002a), (2002b), (2007a), (2007b), (2011), (2012).
35 Agrippa (1600); Chapter 12.2 of this book.
36 Grafton (1991), pp. 145–77; Grafton and Weinberg (2011), pp. 30–42; Chapters 12 and 13 of this book.
37 Chapter 14 of this book.
38 Arist. *Ath. pol*. in P. Lond. 131; P. *Oxy.* LXV, 4468; Momigliano (1966), pp. 1–27; (1990), pp. 54–79; (1994), pp. 251–80; Herzog (1983).

39 Berthelot and Ruelle (1888); Kroll (1898–1924); Housman (1903), p. xliii; Preisendanz (1928–31); Gow (1936), p. 13; Betz (1986); Chapter 1.3 of this book.
40 Malinowski (1922), (1925); Lloyd (1966), (1970), (1973), (1979), (1983), (1987), (1990), (1991), (1996), (2003); Burkert (1972), (1983), (1985), (1987), (1996), (2001).
41 Frazer (1922), pp. 12–43; Chapters 1.2 and 15 of this book.
42 Boll (1903); Neugebauer (1969), pp. 80–91; Gombrich (1970), pp. 191–8; Warburg (1999b).
43 Warburg (1999b), p. 581.
44 Burckhardt (1989), pp. 352, 513.
45 Warburg (1999b), p. 586; Nietzsche (2013), p. 136 (3.27).
46 Cassirer (1964), p. 105; Gombrich (1954), p. 291.
47 Warburg (1999a), p. 650; Gombrich (1970), pp. 16, 25–42, 97–8, 145, 195–205, 254–9, 316.
48 Warburg (1999a), p. 599; Gombrich (1970), pp. 88–95, 216–27.
49 Warburg (1999a), pp. 607, 613, 644–5, 650.
50 Yates (1964), pp. 156, 432, 448; Chapter 1.4 of this book.
51 Yates (1964), pp. 57, 81; Gombrich (1970), pp. 95, 195–205, 264–5, 300.
52 Chapters 1.4, 8–9 of this book.

3. ANCIENT PHILOSOPHY IN FICINO'S MAGIC: PLOTINUS

1 Plot. *Enn.* 4.4.42.11–16; English translations (sometimes lightly adapted) of Plotinus are by Stephen MacKenna in Plotinus (1991).
2 Chapter 11 of this book.
3 Ficino (1989), p. 242; Kristeller (1937), I, xii, lxxxiv; Garin (1960), pp. 18–23; cf. Walker (2000), p. 3, n. 2, pointing out that twelve sections of the next chapter of the *Enneads* (4.4.30–42) "deal with astral influence" – Ficino's topic – "in much greater detail"; also Zanier (1977), pp. 12–18, 29, 40, indicating that *Enn.* 2.3 is more basic for Ficino's purposes. Since *Enn.* 2.3 is a late work and 4.3–4 are from the middle period (Porph. *Plot.* 5.20–5), 2.3 might be read either as superseding 4.3–4 or as deriving from those earlier statements – the latter, in my view, more plausibly for the salient issues of *logos* (2.3.16–17) and sympathy (2.3.7.14–23).
4 Plot. *Enn.*4.3.1–11, esp. 4.3.5.8–10, 17–18; 9.27–8; 10.38–41; 11.9–12; Sext. Emp. *Math.* 9.127–30; Ficino (1959), p. 1736; cf. Armstrong (1940), pp. 54–5.
5 Plot. *Enn.*4.4.35; Aug. *Civ.* 7.30, 12.25; Aquinas, *Sent.* 2.17.2.2, 18.1.2–3; Ficino (1989), pp. 244–6, 386–8; (1959), pp. 1737, 1746; Nardi (1960), pp. 75–85, 96–8; Wippel (2000), p. 336; Pabst (2012), pp. 96–8, 262–8.
6 Ficino (1989), p. 386; Chapter 11.4.D–E of this book.

7 Plot. *Enn.* 4.4.26, 30–45; Garin (1960), p. 29; Hellemann-Elgersma (1980), p. 41; Sleeman and Pollet (1980), coll. 982–6; Walker (2000), p. 3, n. 2, with n. 3 of this chapter.

8 Plot. *Enn.* 4.3.11; Bréhier in Plotinus (1924–38), IV, 13–22; Armstrong (1970), p. 217; cf. Hellemann-Elgersma (1980), pp. 38–41: Bréhier divides 4.3 at 1–8 (relations among Soul and souls), 9–11 (the World-Soul and its body) and 12–18 (the human soul and body); he also notes that 4.3.12 starts with the soul's "leap downward," surely anticipated in the statue magic of 4.3.11; cf. *Asclep.* 23–4, 37–8.

9 Ficino (1959), p. 1745; Bréhier in Plotinus (1924–38), IV, 46–57; cf. Hellemann-Elgersma (1980), pp. 40–1; for *suntaxis*, see Plot. *Enn.*4.3.8.19–21.

10 Ficino (1989), pp. 306, 350, 388–90: Plotinus uses *agalma* (statue), an important word for Platonists, at 4.3.10.28 and 11.2, but nowhere else in 4.3–5. At 4.3.30.3, *eikôn* is an 'image' of the imagination, and at 4.4.10.12 it is a 'likeness' in Soul. On statues in Neoplatonism, see Bidez (1913), pp. 143–57, 1★–23★; for an ithyphallic statue of Hermes in Plotinus, see *Enn.* 3.6.19.25–30 and Ficino (1959), p. 1720; also Copenhaver (1992a), pp. xvi, xxxv–xlii, lviii–lix; Chapters 8–10 of this book.

11 Plot. *Enn.* 4.3.10.1–11; Ficino (1959), p. 1737; Armstrong (1940), pp. 63, 100, 107; (1970), pp. 252–4; Deck (1967), pp. 42–3, 56, 61; Rist (1967), pp. 74, 84–6, 94, 255; Dillon (1977), pp. 46, 80, 95, 128, 136–7, 159, 252, 285, 390.

12 Plot. *Enn.* 4.3.8.38–60, 9.12–51, 10.14–17, 11.1–6; Ficino (1959), pp. 1734–7; Armstrong (1940), pp. 55–7; (1970), pp. 254–5; Hellemann-Elgersma (1980), p. 34; see also *C.H.* 16.6, which Ficino did not translate.

13 Ficino (1959), p. 1737; Deck (1967), p. 58; Armstrong (1970), pp. 248, 255; Hellemann-Elgersma (1980), pp. 32, 355, 416, 425; n. 5 in this chapter.

14 Ficino (1959), p. 1734; Hellemann-Elgersma (1980), pp. 416, 428; Copenhaver (2009b).

15 Plot. *Enn.* 4.4.31.8–15, 24–9, 48–50; 32.1–32; 34.23–8; 35.4–8, 22–3; 36.25–7; 37.17–20, 40.1–9; 42.6–19; MS Vallicellianus F 20, f. 138^{v}; Ficino (1956), p. 220; (1959), pp. 1747–8; (1989), pp. 246–8, 384–6; Armstrong (1940), pp. 77, 98; Rist (1967), pp. 203–7.

16 This lexical analysis of *Enn.* 4.4 is based on the entries in Sleeman and Pollet (1980); see also Plot. *Enn.*4.3.2.24, 12.24, 20.29.

17 Plot. *Enn.*4.3.2.24, 20.29; 4.4.5.17–18; 23.18; 29.23; Pl. *Resp.* 365E, 373B; *Legg* 685C; *Plt.* 291D; Arist. *EN* 1160^{b}2; *De an.* 414^{b}20; *Part. an.* 640^{b}34.

18 Plot. *Enn.* 4.3.12.24; 4.4.33.37–8; 34.13–14, 20, 27; 35.15, 19, 46, 49–51, 58, 60, 65.

19 Plot. *Enn.* 4.4.33.12; 34.29; 40.14, 21–2; Pl. *Legg.* 655A, 669D.

20 Plot. *Enn.* 4.4.33.16, 20, 33, 34–5; 34.7, 15, 18, 19, 21, 24, 27; 35.12, 15, 44, 47, 55; 40.15.

21 Plot. *Enn.* 4.4.26.2; 29.23; 31.13; 34.4, 29, 32; 34.10, 22; 35.20.

22 Plot. *Enn.* 4.4.33–5.

23 Ficino (1959), p. 1746.
24 Plot. *Enn.* 4.4.34.33–8; 40.14–19; Ficino (1959), p. 1746.
25 Plot. *Enn.* 4.4.34.9–11; 35.4–8, 12–22, 65–70; Ficino (1959), p. 1746; Chapter 11.4.D–H of this book.
26 Plot. *Enn.* 3.3.4.37–41; Ficino (1989), pp. 328–30; Deck (1967), pp. 61–2.
27 Aquinas, *SCG*, 3.105; Ficino (1989), pp. 328–30, 340–42.
28 Plot. *Enn.* 4.4.35.65–70; (1959), pp. 1737, 1746; (1989), pp. 242–6, 386–90; Armstrong (1940), pp. 54, 107; (1970), p. 252; Deck (1967), pp. 59–62; Rist (1967), pp. 85–6, 107–10; n. 5 in this chapter.
29 Deck (1967), pp. 74–7; Armstrong (1970), p. 256.
30 Plot. *Enn.*4.3.11.8–12; Aquinas, *ST* 1.4.1 resp.; 115.1 ad 2; 2, ad 1, 2, 4; 3.32.5 ad 3; Ficino (1989), pp. 388–90.

4. ANCIENT PHILOSOPHY IN FICINO'S MAGIC: NEOPLATONISM AND THE CHALDAEAN ORACLES

1 Iambl.*Myst*.97.4–7.
2 Ficino (1989), pp. 384–8; *Orac. Chald.*, ed. Des Places; Iambl. *Myst.*, ed. Des Places, also ed. Clarke, Dillon and Hershbell; Syn. *Insomn.*, ed. Lamoureux and Aujoulat; for Synesius in English, see Myer (1888) and Fitzgerald (1930); also Klutstein (1987), pp. 116–18, for the Latin version of the *Oracles* known to Ficino; Copenhaver (1992a), pp. xvi, xxxv–xlii, lviii–lix; also Lacombrade (1951); Larsen (1972); Bregman (1982); Athanassiadi (1999); Holowchak (2002); Lewy (2011); the introductions by Des Places in Iamblichus (1966); by Clarke, Dillon, and Hershbell in Iamblichus (2003); by Aujoulat in Synesius (2004); and Chapters 8–10 of this book.
3 Ficino (1989), pp. 306, 388–90; references on pp. 276 and 312 are to medieval pseudepigrapha – the *Liber Hermetis de xv stellis* and *De virtutibus septem herbarum* – not to the *Asclepius* or Ficino's *Pimander*, his translation of the first fourteen discourses of the Greek Corpus Hermeticum: see Kristeller (1937), I, cxxix–cxxxi; cf.Yates (1964), pp. 28–35; also Festugière (1950–4), I, 146–86; Van Bladel (2009) on Arabic Hermetica; and Chapters 3 and 11.4.C of this book.
4 *Asclep.* 23–4, 37–8; for a recent analysis of the god-making passages, see Van den Kerchove (2012), pp. 185–222.
5 *Asclep.*23 (326.1–2), 24 (326.9–11), 37 (347.13–20, 348.3–6), 38 (348.19–49.1, 5–6); Aug. *Civ.* 8.24, 10.11; Ficino (1989), pp. 306, 350, 388–90.
6 Plot. *Enn.* 4.3.11.1–2, 8–10, 13–14, 16–18, 23–4; *Asclep.* 24 (326.9–11, 14–15), 37 (347.10–15, 18–19, 348.8–10), 38 (349.3–7, 8–11); Ficino (1989), pp. 388–90; Chapter 3 of this book.
7 Aug. *Civ.* 8.24; Psellus, *Comm.* 1133^{a}3-^{b}4 (Des Places); Ficino (1989), pp. 306, 350, 388–90.
8 Syn. *Insomn.* 132.2–33.1; Ficino (1959), p. 1969; (1989), pp. 244, 306, 388.

9 Dodds (1951), pp. 283–99; Bregman (1982), pp. 125–45, 177–84; Lewy (2011), pp. 3–13, 34–43, 60, 461–71, 487–96, 694–701, 703–23; see Cameron (2011) for the transition to Christianity in the West during the same period.

10 Bregman (1982), pp. 145–54; Sedley (1999), pp. 388–90; Aujoulat in Synesius (2004), pp. xi–xvii, 187–267.

11 Tert. *Praescr.* 7.9; Plot. *Enn.* 4.4.40.1–12, 42.14–17, 43.12–19; Syn. *Insomn.* 132.2–33.1; Ficino (1959), p. 1969; (1989), pp. 244, 384.

12 Pl. *Symp.* 186A–88D, 202E–3A; Var. *LL* 5.76.4; Plin. *Nat.* 37.156; *Orac. Chald.* 77 (Des Places), with Klutstein (1987), p. 118; Plot. *Enn.* 4.4.40.9–20; Psellus, *Comm.* 1133^{a}4–^{b}4; Frazer (1922), pp. 802–6; Lewy (2011), pp. 132–7, 156–7, 249–54; Gossen, "Ιυγξ," *RE*, XX/2, coll. 1384–6; *OED*, s.v. "jynx," 2, with *Suppl.*, s.v. "jinx."

13 Syn. *Insomn.* 132.2–133.2, 139.3; Ficino (1959), p. 1969; (1989), p. 244; Smith (1974), p. 90.

14 Procl. *In Crat.* 51.33, 174.82; Ficino (1989), pp. 306, 384–8; Dodds (1968), pp. 291–5.

15 Iambl. *Myst.* 82.9–15, 83.16–84.4, 91.9–92.7, 103.2–10, 114.3–15.15, 142.18–43.3, 144.1–8, 155.28–56.3, 160.15–61.2, 176.3–78.2, 219.12–18; Des Places in Iamblichus (1966), pp. 5–21; Antony Lloyd (1970); Larsen (1972), pp. 148–96; Wallis (1972), pp. 105–10, 120–3; Smith (1974), pp. 81–150.

16 Iambl. *Myst.* 96.11–98.15, 126.17–27.3, 135.14–36.10, 139.1–4, 184.1–13, 209.4–11.8; Smith (1974), pp. 90–9, 105–7, 110, 149.

17 Iambl. *Myst.* 70.18–71.18, 72.12-17, 82.9-15, 88.5–9, 176.13.77.12, 196.13–97.11, 227.1–28.12, 229.17–30.6, 231.5–32.9.

18 Iambl. *Myst.* 167.9–15, 169.1–70.2, 170.7–10, 171.5–13, 175.13–14; Ficino (1959), p. 1891; (1989), pp. 238, 316, 342, 388.

19 Iambl. *Myst.* 82.9–15, 91.9–15, 129.18–130.6, 172.15–17, 176.13–78.11, 190.4–91.11; Aquinas, *SCG* 3.104–5; *De occ. op. nat.* in McAllister (1939); Ficino (1959), pp. 1881, 1886, 1891–3; (1989), pp. 316, 342; Chapter 6 of this book.

20 Iambl. *Myst.* 167.9–76.2, 246.16–20, 247.11–48.2; *Asclep.* 38 (349.8); Ficino (1959), pp. 1890–2, 1901; (1989), p. 388.

21 Iamb. *Myst.* 4.10–12, 176.1–8, 249.2–8, 278.5–8; Ficino (1989), pp. 282, 332, 356, 366, 368, 372.

22 *Orac. chald.* 77, 128, 150, 206, 223 (Des Places); Iambl. *Myst.* 178.3–18; Psellus, *Comm.* 1132^{b}1–13, ^{c}1–11, 1133^{a}3–^{b}4, 1140^{b}1–11, 1149^{a}10–^{b}11 (Des Places); Galle (1689), pp. 79–81; Ficino (1989), pp. 244, 306, 368.

23 Iambl. *Myst.* 219.1–25.5.

24 Iambl. *Myst.* 162.13–64.5, 207.7–8.6; Dodds (1968), p. 285; Smith (1974), pp. 92–4, 122–7, 147.

25 Iambl. *Myst.* 169.4–14, 232.5–34.4; Ficino (1959), pp. 1736, 1745–8, 1891, 1898–9; (1989), p. 390; Chapter 3.1–2 of this book.

26 Plot. *Enn.*4.3.11; Iambl. *Myst.* 96.11–7.19, 232.5–34.4; Ficino (1959), pp. 1182, 1898–9; (1989), p. 306.
27 Mazza (1999), pp. 220–2; McGrath (2013), pp. 65–7; Chapters 2.2, 12.1, 13.1, 14.1, 5 of this book.
28 Iambl. *Myst.* 96.13–7.9; Ficino (1989), p. 390.
29 Ficino (1989), p. 392; Chapter 2.1–2 of this book.

5. ANCIENT PHILOSOPHY IN FICINO'S MAGIC: HERMES AND PROCLUS

1 *K.K.* 68.
2 *K.K.* 68; introduction by Festugière in *C.H.*, IV, pp. cxxvi–ccxix. The second word of the title is 'cosmos,' but how to translate the first word is unclear: 'girl,' 'daughter,' 'maiden,' 'virgin,' 'pupil,' 'eye' and 'pupil-of-the-eye … of the cosmos,' probably referring to Isis, are all possible.
3 *C.H.,* I–IV; Delatte, Govaerts and Denooz (1977), p. 254.
4 *C.H.* 1.5, 8–9, 11, 13–14, 18–19, 25–7; 2.6; 3.2; 4.1–3, 8; 5.3–8, 11; 8.1, 5; 9.3–4, 7–8; 10.1, 7, 11–14, 22; 11.3, 7, 16; 12 tit., 15–16, 21–2; 13.2, 9–11, 19–21; 16; cf. Arist. *Metaph.* $1071^{b}3$–$74^{b}14$; *Mete.* $339^{a}2$–33; [Arist.] *De mundo* 39^{7b}–99^{a}.
5 Copenhaver (1992a), pp. xxxii–iii.
6 *C.H.* 10.4, 22–3; *Asclep.* 3.
7 *C.H.* 16.15; *Asclep.* 2–7; Iambl. *Myst.* 207.7–17, 215.12–16.7, 232.10–33.16; Procl. *Elem.* 39, 71–2, 79, 140, 143, 189; Festugière (1950–4), II, 20–1; (1967), pp. 121–30; Sambursky (1962), pp. 104–10; Dodds in Proclus (1963), pp. 344–5; Siorvanes (1996), pp. pp. 76, 97, 103, 129.
8 *Orac. chald.* 203; *Asclep.* 19, 23–4, 37–8; Procl. *Elem.* 21, 97, 99–100, 102, 108, 110, 115, 125, 145, 181, 204; Chapter 4.1 of this book; Sections 4 and 5 of this chapter.
9 *Asclep.* 19.
10 *K.K.* 68; Copenhaver (1992a), pp. xxxii, xxxvii, xlii, xlix, liv; Festugière in *C.H.,* III, i–ix.
11 *C.H.* 16.1.
12 Festugière (1950–4), I, 83–5; (1967), pp. 37, 72–87; Walker (2000), pp. 17–21; Chapters 8 and 9 of this book.
13 Yates (1982–4), III, 227–8, originally published in Yates (1968); for the subsequent controversy, see Westman and McGuire (1977); Copenhaver (1990).
14 Yates (1964), pp. 22–8, 35, 62–8, 137, 241–6; (1982–4), III, 229, 240; cf. *C.H.* 12.16–18.
15 Hopfner (1921), I, 255–61, 327, 542–46, II, 1–39; Hopfner, "Μαγεία," *RE*, XIV/1, coll. 316, 367–73; Röhr (1923); Wellman (1928), pp. 3–5, 9–16, 28, 42–51; Bidez and Cumont (1938), I, 107–17, 190–99; Chapters 2.1–2, 3, and 4 of this book.

16 Hopfner (1921), I, 205, 510–13, II, 22–3; Bidez (1928); Lewy (2011), pp. 40–2, 70–4, 157, 177–8, 255–7, 464; Chapter 4 of this book.
17 MS Laurentianus Plut. 10.32, fols 119r–21v and 82.15, fols. 126v–8v; MS Laurentianus Strozz. 97, fols. 147v–51v; MS Vallicellianus F20, fols. 138r–40v; Ficino (1497), sigs. hviir–viiiv; (1959), pp. 1928–9; Bidez (1927); (1928), pp. 140–1, 148–51; Bremond (1933); Kristeller (1937), pp. xii, xv, cxxxiv–v; Festugière (1950–4), I, 133–6; Sicherl (1957), pp. 23–6, 36, 79–80, 184–8; Marcel (1958), pp. 489–95; Joukovsky (1980).
18 Ficino (1989), pp. 242, 306, 308, 310, 314, 316, 318, 384.
19 Procl. *Elem.* 140–5; Ficino (1989), pp. 246–8, 308–10; Hopfner (1921), I, 205; Rosan (1949), pp. 67, 85–7, 104; Dodds in Proclus (1963), pp. pp. xvii, 129, 208–9, 257–60, 267, 273; Festugière (1967), pp. 126–7; Siorvanes (1996), pp. 73–86, 196–7.
20 Rosan (1949), pp. 213, 245–54; Armstrong (1955–6), p. 77; Dodds in Proclus (1963), pp. ix–xi, xx, n. 4; Zintzen (1965), pp. 84, 94–6; Festugière (1968), pp. 7, 17; Siorvanes (1996), pp. 1–44, 114–21, 189–94.
21 Plot. *Enn.* 4.4.42, 5.8.4; *Orac. chald.* 2.3, 108.1, 109.3, 224.1–6; Iambl. *Myst.* 96.13–7.6; Procl. *Elem.* 5, 28, 29, 32, 103; Hopfner (1921), II, 1–16; Hopfner, "Μαγεία," *RE*, XIV/1, coll. 314, 393; Bremond (1929), pp. 460–2; Rosan (1949), pp. 73, 104–5; Dodds in Proclus (1963), pp. xii, 216–19, 222–3, 254; Dodds (1951), pp. 292–3; Zintzen (1965), pp. 77–9, 91; Lewy (2011), p. 462; Chapter 4.5 of this book.
22 Plin. *Nat.* 9.79–80, 143; 20.1–2; 24.1-4; 25.72, 80–1, 115, 145; 28.84, 90, 92, 101, 112–18; 32.1-2; 34.147, 150–1; 36.126–7; 37.55–61, 134–5, 142, 145, 163; cf. Pl. *Resp.* 528E-30C; *C.H.* 9.4, 10.10; *Asclep.* 13; Hopfner (1921), II, 1–16; Röhr (1923), pp. 26–8, 56–64, 73, 76, 81, 86–7, 90–4; Wellmann (1928), pp. 19–28; Marrou (1938), pp. 233–5, 350–1, 454–7; Festugière (1950–4), I, 65, 84, II, 45, 139, 150–2; Chapter 7 of this book.
23 Pl. *Symp.* 202E–3D; Hopfner, "Μαγεία," *RE*, XIV/1, col. 308; Boyancé (1955), pp. 205, 207; Lewy (2011), p. 436.
24 Ficino (1956), p. 220; Zambelli (1973), pp. 128–30; (1974), pp. 60–1, 70.
25 Plot. *Enn.* 4.4.40, 43–4; Syn. *Insomn.* 132.3; Ficino (1989), pp. 384–6; Zambelli (1973), pp. 128–30; (1974), pp. 60–1, 70.
26 Sambursky (1959), pp. 2, 5, 27, 66; (1962), pp. 3–4, 9–10, 102–3; Hahm (1977), pp. 157–74; Sedley (1999), pp. 388–90.
27 Plot. *Enn.* 4.4.40; Procl. *In Alc.I*, 52–3; Armstrong (1940), pp. 58, 98–106; Gersh (1973), pp. 123–7.
28 MS Vallicellianus F20, fol. 138r; Ficino (1989), p. 354.
29 MS Vallicellianus F20, fol. 139; Ficino (1989), pp. 314–18.
30 Ficino (1989), p. 316.
31 Grafton (1991), pp. 145–77.
32 See Chapter 15 of this book.

6. SCHOLASTIC PHILOSOPHY IN FICINO'S MAGIC

1 Ficino (1989), p. 390.
2 Ficino (1989), p. 394; Marcel (1958), pp. 495–503.
3 Chapter 14 of this book.
4 *K.K.* 68; Ficino (1989), p. 396, also pp. 236–40; Kristeller (1937), pp. xii, lxxxiv; Walker (2000), pp. 42–4; Copenhaver (1992a), pp. xxxii–viii; Chapters 3–5 of this book.
5 Ficino (1989), pp. 260, 278–80, 298–300, 322, 346–8, 356, 362–4; Lloyd (1973), pp. 75–90; Nutton (2013), pp. 222–53.
6 Gal. *Ther. Pis.*3 (K 14.224–5); *Loc. aff.*5.6 (K 8.339–40); *SMT* 4.9, 5.1, 5.7, 5.18–19, 6.1, 9.1.4, 11.2.23, 12.1.34 (K 11.650, 704–6, 726–7, 761, 767, 803–4; 12.192, 300–1, 356); *Comp. med. loc.* 8.8 (K 13.212); *Comp. med. gen.* 1.16 (K 13.435); *Hipp. epid.* 65 (K 17.2.136-7); *Temp.* 3.1 (K 1.654–5): these passages are discussed by Röhr (1923), pp. 95, 99, 108–13; see also Bianchi (1982), pp. 203–4.
7 [Gal.] *Aff.ren.* (K 19.677–8); Röhr (1923), pp. 99, 107–8; Nutton (1976), pp. 6, 30.
8 Gal. *SMT* 10.2.1, 19, 21 (K 12.192, 207, 209); Diosc. 5.141–2.
9 Gal. *SMT* 6.3.10, 10.2.19 (K 11.858–61, 12.207); Bonner (1950), pp. 22–5, 51, 54–60.
10 Aug. *Doctr. chr.*2.23.36, 29.45.
11 Ficino (1989), pp. 254, 316, 386; Chapter 5.5 of this book.
12 Arist. *De an.* 418^{b}4–13; Ficino (1989), pp. 306, 322, 332.
13 Ficino (1989), 354, 362–4; Walker (2000), p. 15.
14 Ficino (1989), p. 314: the distinction between amulets and talismans is my stipulation.
15 Ficino (1989), pp. 306, 318, 326, 334, 340, 350, 354–6, 362.
16 Ficino (1989), pp. 278, 316–18, 334, 338–42, 356, 396.
17 Aquinas, *SCG* 3.104–5; *De occ. op. nat.* 17, 20, in McAllister (1939); Albertus, *Spec.* 11, 16; Ficino (1989), pp. 340–2; Zambelli (1992); Thorndike (1923–58), II, 692–4.
18 Aug. *Doctr. chr.*2.23.36, 29.45; Aquinas, *SCG* 3.99, 104–5; *ST* II-II.96.2ad 1–2; [Aquinas], *De fato* 5; Ficino (1989), pp. 280, 340–2, 382, 390; Chapter 5.3–5 of this book.
19 Aquinas, *ST* II–II.96.2. ad 1–2; [Aquinas], *De fato* 5; Ficino (1989), p. 340.
20 Aquinas, *SCG* 3.105; Kristeller (1964), pp. 12–14; (1974), pp. 73–4; Collins (1974), pp. 47–54, 67–70; Copenhaver (2009b); n. 26 of this chapter.
21 Albertus, *De min.* 2.3.5-6; *Spec.* 4, 11, 16; Ficino (1989), p. 340.
22 Ficino (1989), pp. 304, 320–2, 332–4, 362–4.
23 Albertus, *De min.* 2.3.5; Ficino (1989), pp. 316–18, 322–4, 338–40; Ficino in Katinis (2007), pp. 175–6, with the introduction by Katinis, pp. 121–2.

24 Aquinas, *ST* I. 45.8, 65.4, 76.4, 91.2, 110.2; Ficino (1989), pp. 328; Litt (1963), pp. 99–148; North (1986), pp. 73–80.
25 Aquinas, *De occ. op. nat.* 9–11, in McAllister (1939); *ST* I.110.1, 115.3, II–II.96.2; *SCG* 3.92, 104; Litt (1963), pp. 113–27; Ficino (1989), p. 318, cf. 244.
26 Aquinas, *SCG* 3.105; Ficino (1989), pp. 328, 340; Klaasen (2013), pp. 29–30; n. 20 of this chapter.
27 Ficino (1989), pp. 300, 326, 330, 354–6, 362.
28 Ficino (1989), pp. 338–42.
29 Albertus, *De nat. loci* 1.4; Ficino (1989), pp. 356, 396; Blum (1992), pp. 49–56 for the medieval debate; Chapter 4.3–5 of this book.
30 Arist. *Metaph.* 1013^{a}24–9, 1028^{b}33–29^{a}35, 1032^{b}1–2, 1043^{a}27–8, 1060^{a}18–22, 1084^{b}3013; *Phys.* 190^{b}5–23, 194^{b}25–9; *Cael.*278^{a}16–16; *De an.* 412^{a}; Cherniss (1944), I, 174; Owens (1978), pp. 329–38;Von Bormann (1972).
31 Plot. *Enn.*6.3.3.12-19; Procl.*In Tim.* 255.29; Hopfner, "Μαγεία," *RE*, 14.1, coll. 330–4.
32 Avicenna (1507), fols. 33, 507; Goichon (1933), p. 70; (1938), pp. 185, 188; Siraisi (1987), pp. 19–76.
33 Arist. *De an.* 412^{a}6–23; Aquinas, *ST* I.76.4.
34 Aquinas, *SCG* 1.50.2, 118.2; 2.92; *De ente et ess.* 14, 22, 46; *De occ. op. nat.* 7, 9, 11, 14 in McAllister (1939), with McAllister's comment on p. 93; *Comm. in gen.* 1.8.5; *Comm. in de an.* 2.2; Avicenna (1507), fol. 33; Hippocrates (1508), fol. 139^{v}; Benzi (1523), fol. 69; Peter of Abano (1526), fol. 99; Maier (1952), pp. 4–6; Gilson (1965), pp. 172–4, 228–9; Michaud-Quantin (1970), p. 137; Von Bormann (1972), coll. 1000–2; McVaugh in Arnaldus of Villanova (1975), pp. 8, 17–19.
35 Aquinas, *SCG* 2.58, 3.92; *ST* I.3.7, 65.4, 76.3–4, 85.5; *De unt.int. c. Av.* 2; *De occ. op. nat.* 3, 6, 14 in McAllister (1939); Caietanus, *Comm. in de ente* 7, pr.
36 Maier (1952), pp. 7–14; De Wulf (1924), pp. 263–4; Solmsen (1960), pp. 80, 321–52.
37 Aquinas, *ST* I.65.4, 110.1, 115.3; II–II.96.2; *SCG* 2.68, 3.92; *De occ. op. nat.* 6, 10–11 in McAllister (1939); Litt (1963), pp. 114, 119, 121; Copleston (1962), II.1, 223, II.2.46–7; nn. 5–7 of this chapter; Chapter 12.4 and 14.2 of this book.
38 Arist. *Phys.* 194^{b}9–15; Aquinas, *ST* I.45.8, 65.4, 115.3; *SCG* 3.103; *De occ. op. nat.* 7–10, 14, 16 in McAllister (1939); Grabmann (1920), pp. 134–7, 173; Thorndike (1923–58), II, 607; Maier (1952), pp. 22–7; Siraisi (1981), p. 153.
39 Albertus, *De min.* 1.1.5–6; 2.1.3–4, 3.6; *Phys.* 4.1.10–11; *De nat. loci* 1.1.4; Nardi (1960), pp. 72–4.
40 Aquinas, *Comm. in metaph.* 7.2, 8.3; *Comm. in phys.* 7.5; *Comm. in de an.* 2.2; *Comm. in cael.* 2.14; Averroes, *Comm. in phys.* 2.13; Owens (1978b), pp. 88–9.
41 Aquinas, *SCG* 3.104; *ST* I.7.1; *Comm. in phys.* 7.5; Albertus, *De caelo* 3.2.8; Averroes, *Comm. in phys.* 7.16; *Comm. in cael.* 3.67; Copleston (1962), II.1, 47–8, 94, 147, 152–3, 162; Gilson (1965), p. 249.
42 Torrigiano (1557), fol. 148^{v}; Siraisi (1981), pp. 64–6, 141–2, 146, 150–9, 179.

43 Demaitre (1980), pp. 78–80; Siraisi (1981), pp. 150–6, 160–1.
44 Jacopo da Forlì (1508a), fol. 159v; (1508b), fol. 139v; (1518), fols. 75v, 107, 230–1v; Benzi (1523), fols. 68v–9.
45 Arnaldus of Villanova (1520b), fol. 87v; Demaitre (1980), pp. 21, 42–3, 97–100, 145–7; Shatzmiller (1982–3).
46 Arnaldus of Villanova (1520b), fols. 6v–7, 86–90v; Bernard of Gordon (1570), sig. A6; Zanier (1977), pp. 21, 23, 47; Copenhaver (1978); Chapter 11.3 of this book.
47 Plot. *Enn.* 4.4.26; Aquinas, *SCG* 3.104; Albertus, *De min.* 1.1.6; Ficino (1959), p. 1744; (1989), pp. 242–54, 320–4, 328, 354–62, 366–72; Garin (1960), pp. 19–24, 28; Zanier (1977), pp. 24–8, 33–4, 42, 52–6; Sedley (1999), pp. 388–90; Walker (2000), pp. 3–13, 36–44.
48 Procl. *Elem.* 39.71–2, 79, 140–5, 189; Iambl. *Myst.* 96.17–7.9, 207.10–18, 215.12–16.7, 232.10–33.16; *Asclep.* 23–4, 37–8; Ficino (1959), pp. 1882, 1889; (1989), pp. 248, 308–12, 356–8, 384–92; Dodds in Proclus (1963), pp. 208–9, 222–3, 257–60, 263, 267, 344–5; Dodds (1968), pp. 287, 291–5; Chapter 5.1, 4–5 of this book; also 5.3.2, 5–6, 8–10, 12.
49 Aug. *Civ.* 8.19–24; Aquinas, *SCG* 3.104; Ficino (1989), pp. 388–90; Chapters 4.1, 3, 5, and 7 of this book.
50 Section 3 of this chapter.
51 [Gal.] *Aff. ren.* (K 19.677–8); Iambl. *Myst.* 96.13–7.9; Aug. *Doctr. chr.* 2.23.36, 29.45; Ficino (1989), p. 390; Chapter 4.5 of this book; Section 2 of this chapter.
52 Aug. *Civ.* 8.23; 10.9–12, 16; 21.6; Aquinas, *ST* I.115, II–II, 96.2; *SCG* 1.104; Ficino (1989), p. 572; cf. Yates (1964), pp. 6–7, n. 1, mistranslating the first clause of this passage to suggest that Ficino is reporting an earlier opinion ("I at first thought") about which he had changed his mind.
53 Plot. *Enn.* 4.3.10–11, 4.4.36, 5.9.6; Aquinas, *ST* I.115.2; Ficino (1989), pp. 326, 386–92; Copleston (1962), II.1, 91–2, 305–7, II.2, 16, 47, 170–8, 306; Yates (1964), p. 67; Wallis (1972), pp. 25, 68–9; Hahm (1977), pp. 60–2, 75–6; Nardi (1960), pp. 75–85, 96–8; Chapters 3.1, 4, 4.5 of this book.

7. DATA: A TALE OF TWO FISH

1 [Alex. Aphr.] *Probl.* 1 pr.
2 Chapters 12.2 and 14.5 of this book.
3 AT VI, 93–105; Pascal (1954), pp. 396–9; Mazauric (1998); Jones (2001); Chapter 12.4 of this book.
4 Plin. *Nat.* 7.16–18; 8.52, 77–9; 10.46–9; 29.78; Plu. *Quaest. conv.* 641B-C; Gudger (1918); A. Orth, "Huhn," *RE*, VIII, 2528–9; Kellaway (1946); Hesse (1978); Breiner (1979), pp. 34–8; Wu (1984); Finger and Piccolino (2011); Chapter 5.3.8–9, 4 of this book.
5 Gassendi (1658), III, 653; (1959), p. 489.

6 *Kyr.* 1.13, 4.18, 44; Wellman (1928), pp. 3–4, 11–12, 20–1, 28, 43–52; cf. Fraser (1972), I, 439–44, II, 636–46.
7 Plin. *Nat.* 32.1–7; Stahl (1962), pp. 86–121; Bodson (1986); French (1986); Healy (1986); Locher (1986); Morton (1986); Nutton (1986); Scarborough (1986); Beagon (1992).
8 Plin. *Nat.* 9.78–9, 143, 162, 165; 32.94, 102, 105, 133, 135, 139.
9 Arist. *HA* 505^{b}19–24, 531^{a}5–6; Plin. *Nat.* 9.79–80, 100.
10 Whitehead et al. (1984–6), I, 64–7, II, 832, III, 1019–12, 1329–34; Nelson (1984), pp. 34–8, 60–1, 293–4, 349–51, 355–6.
11 Arist. *HA* 505^{b}19–24; Ael. *NA* 2.17; Opp. *H* 1.212, 217; Plu. *Quaest.conv.* 641B–E; Thompson (1947), pp. 67–8.
12 Ath. 7.312^{b}; Thompson (1947), pp. 171–2; Grundfest (1967); Nelson (1984), pp. 60–1, 154–6; Wu (1984), p. 598.
13 Arist. *HA* 505^{a}3–4, 506^{b}6–8, 540^{b}17–20, 565^{b}24–6, 566^{a}22, 620^{b}19–24; Plin. *Nat.* 9.78, 143, 165; 32.94, 139; Opp. *H* 1.104; 2.56, 67, 85; 3.149. Plu. *Soll. an.* (978B–D); Ath. 7.312$^{a–b}$, 314$^{a–e}$, 336^{c}; Kellaway (1946); Finger and Piccolino (2011), pp. 28–63.
14 Arist. *HA* 620^{b}19–24; Ael. *NA* 9.14; Ath. 7.314$^{b–d}$. Finger and Piccolino (2011), pp. 35, 55, 59–61.
15 Arist. *HA* 620^{b}10–24; Thphr. *Frg.* 178; Plin. *Nat.* 9.143, 32.7; Plu. *Soll. an.* 978B–D; Opp. *H*3.151–2; Ael. *NA* 9.14; Plot. *Enn.*4.5.1.23–40; [Alex. Aphr.]*Prob.* 1 pr.; Claud. *Carm. min.* 49.5, 22.
16 Hippoc. *Vict.* 2.41; Pl. *Meno* 80A, 84B; Antig. Car. 48; Var. *L* 5.12.77; Cic. *ND* 2.127; Luc.6.666–87; Ov. *Am.* 3.7.35; *Hal.* 94–100; Sen. *Med.* 346–63; Larg. 11, 99, 162; Diosc. 2.15; Non. 229 M; Marc. Emp. *Med.* 1.11, 36.46; *PGM* 36.284–5 (Betz); Aët. 2.185; Alex. Trall. *Ther.*2.581; Paul. Aeg. 7.3.13.
17 [Alex. Aphr.]*Prob.* 1 pr.; Röhr (1923), pp. 96–7; Blum (1992), pp. 48–9.
18 Gal. *Loc. aff.* 5.6; *MM* 13.6; *SMT* 4.9; 5.1, 7, 18; 6.1; 10,2.1, 21; 11.12.23, 13.48; 12.1.34; *Comp. med. loc.* 8.8; *Comp. med. gen.* 1.16; [*Aff. ren.*] (K 8.339–40; 10.895; 11.650, 704–6, 761–3, 803; 12.192, 209, 300–1, 356, 365; 13.212, 435, 803; 19.677-8); Röhr (1923), pp. 99, 107–12; Chapter 6.2 of this book.
19 Gal. *De usu resp.* 4; *Alim.fac.* 3. 36; *Caus. symp.*1.5, 8; *Loc. aff.*2.2, 6.5; *SMT* 11.48 (K 4.497–8; 6.737; 7.108–9, 143–4; 8.70-3, 421–2; 12.365); Constantine the African (1539), p. 320; Peter of Abano (1473), fols.3^{v}–4^{r}; n. 15 in this chapter.
20 Aberdeen University Library MS 24, fol. 75; Clark (2006), pp. 211–13; Theobaldus (1972); George and Yapp (1991); Hassig (1999).
21 Basil, *Hom. in hex.* 67E–8A, 69A; Eustath. *In hex.Bas.*7.5.6–9, 6.8; Ambr. *Hex.* 5.9.24, 10.30–1.
22 Greven (1914), pp. vii, 22–3.
23 KoninklijkeBibliotheek, The Hague, MS KB, KA 16, folio 114^{v}; Thomas of Cantimpré (1974), p. 134 (7.31); Thorndike (1923–58), II, 361, 373, 377, 381, 383.

24 Albertus (1916–20), XV, 259, XVI, 1532–3 (2.1.8.83; 24.1.48); (1987), pp. 351–2.
25 Albertus (1916–20), XV, 468, 619, XVI, 1548 (6.2.1.65; 8.3.114; 24.1.127); (1987), p. 376; Vincent of Beauvais (1481), 18.75; Finger and Piccolino (2011), pp. 77–94.
26 Wotton (1552), fol. 145r, 149r; Hoeniger and Hoeniger (1969), pp. 30–2; Chapter 13 of this book.
27 Belon (1553), pp. 89–93, 384–8, 440–1; M. Wong, "Belon," *DSB* I, 595–6; Thorndike (1923–58), V, 101, 473, 477, 646, VI, 131–2, 186, 205–6, 564–5.
28 Rondelet (1554), pp. 358–63; Ruelle (1550), fol. 153r; cf. Giovio (1531), pp. 100–1; A. Keller, "Rondelet," *DSB* XI, 527–8.
29 Salviani (1554), fols. 1–56, 62v, 142–5, 255v; C. Castellani, "Salviani," *DSB* XII, 89–90.
30 Gesner (1558), pp. 1182–94; Aelian (1556), ed. Gesner, pp. 15–16, 107, 190, 286; Aelian (1533), ed. Gilles, p. 369; P. Pilet, "Gesner," *DSB* V, 378–9.
31 Aldrovandi (1612), pp. 415–23; Salviani, fols. 142–3; on Aldrovandi and his methods, see Findlen (1994).
32 Belon (1553), pp. 436, 440–1; Rondelet (1554), pp. 436–1; Lonitzer (1551), fols. 307v–9.
33 [Arist.] *Mech*. 850b28–51a38; Rondelet (1554), pp. 361, 401, 440.
34 Gesner (1558), pp. 410–16, 702.
35 Imperato (1672), pp. 679, 684; Aldrovandi (1612), pp. 335–40; M. Piazza, "Ferrante Imperato," *DBI*.
36 Jonston (1657), pp. 16–17; Finger and Piccolino (2011), pp. 99–111.
37 Barbaro (1493–4), sig. hviiiv, ad Plin. *Nat*. 9.75; also 8.133; Plaut. *Cas*. 80; cf. Aldrovandi (1612), p. 335; Maffei (1530), fol. 308r.
38 *De symp*. 1.1, 5, 8 in Fracastoro (1555), fols. 79, 81v–3r; Rossi (1954); B. Zanobio, "Fracastoro," *DSB* V, 104–7; V. Lee, "Fracastoro," *CE* I, 49.
39 Rondelet (1554), pp. 440–1; Cardano (1557), pp. 400–1, 405; (1560), p. 751; (1663), pp. 116–18, 539; Aldrovandi (1612), p. 335; Fierz (1983), pp. 1–8, 22, 25, 31–4, 88–116; Siraisi (1997), pp. 3–23.
40 Scaliger (1557), fols. 290-1r; Hall (1950), pp. 101, 122, 130, 140–6, 153; Jensen (1994), pp. 293–308; Maclean (2008); and Hansen (1985), pp. 50, 136 on the expression *refugium miserorum* in medieval texts.
41 Suárez (1856–78), XXV, 651, 661, 665; Coimbra Commentators (1609a), pp. 316–17.
42 Campanella (1620), pp. 258–9; (1925), pp. 218–19; Chapter 14.3 of this book.
43 Lemnius (1588), p. 530; Keckermann (1621), pp. 606–7; Chapter 12.5 of this book.
44 Gassendi (1658). I, 449–57, VI, 450; Charleton (1654), pp. 375–7; Ekman (1906), pp. vi–vii; Chapter 14.5 of this book.
45 Bacon (1857–74), VIII, 509; Chapters 13.2 and 14.8 of this book.

46 Kircher (1641), pp. 759–61; cf. (1654), pp. 519–25; Godwin (1979b), pp. 9–15, 72–83; Thorndike (1923–58), VII, 227–8, 241–2, 247, 282, 284, 287, 290, 318–19, 326, 357, 361, 383–5, 511, 602, 672, VIII, 4–5, 42, 270–1, 292–3, 29–300, 492, 509, 517, 537, 607–8, 655.
47 Santorio (1630), pp. 643–4; Sennert (1661), pp. 435, 439; Browne (1964), p. 267; M. Grmek, "Santorio," DSB XII, 101–4; H. Kangro, "Sennert," *DSB* XII, 310–13.
48 Paré (1585); Sennert (1661), pp. 435, 439; Keckermann (1621), pp. 606–7; Kircher (1641), pp. 765–6; Charleton (1654), pp. 375–7; Boyle (1772), III, 669, 702.
49 Borelli (1685), pp. 322–3.
50 Fernel (1550), pp. 282–3; Erastus (1572), p. 189; (1574), pp. 23–4, 42–3; Kircher (1641), pp. 765–6; Chapter 12.4 of this book.
51 Bayle (1727–37), I, 584, reviewing Willughby (1713), esp. pp. 81–5; cf. Ray (1713), pp. 28–9.
52 Erastus (1574), pp. 42–3; Suárez (1856–78), XXV, 651; Bacon (1670), pp. 212–13; Browne (1964), p. 262; Finger and Piccolino (2011), pp. 137–60.
53 Redi (1671), p. 47–54; Anon. (1673); Lorenzini (1678); Anon. (1680), pp. 308–408: for bibliography on the rest of the story, see Copenhaver (1991), p. 396, nn. 66–7.
54 Chapters 13 and 14 of this book.
55 Montaigne (1967), pp. 194–5.
56 Montaigne (1967), p. 413; (1965), p. 785.

8. HERMES THE THEOLOGIAN

1 *Asclep*. 38 (349.7–8)
2 Aug. *Civ*. 8.19–26; Copenhaver (1992a), pp. xxxii–l; Van Bladel (2009).
3 Ficino (1471); cf. (1959), pp. 1836–73, with Kristeller (1937), pp. lvii–iii, cxxx–I (esp. cxxx–cxxxi), 96–8; (1956), pp. 222–5; Garin (1988), pp. 7–10, 74; Allen (1990), pp. 39–40; Copenhaver (1992a), pp. xliii–xliv, xlix; Walker (2000), p. 170, n. 2; Campanelli in Ficino (2011), pp. lxii–lxv; cf. Yates (1964), pp. 25, 40, n. 1, recognizing (after Kristeller) that "we have no commentary on the *Asclepius*" but still discussing "Ficino's *Pimander*, with his commentaries," misunderstanding what she read in Ficino (1959), pp. 1836–57.
4 *C.H.* 16.1–2; *K.K.* 68; *Asclep*. 23–4, 37–8; *NHC* 6.6.61.4–22; Chapters 4.1 and 5.1 of this book.
5 Nock and Festugière in *C.H.*; Mahé (1978–82); Fowden (1986); Garin (1988), pp. 27–32; for recent work on the ancient Hermetica, see Van den Kerchove (2012).
6 Yates (1964), p. 11.
7 Ficino (1471), fols.2^{r}–4; Yates (1964), pp. 11, 25–6, 168; Chapter 11 of this book.

8 Delcorno Branca (1976), pp. 470–1; Garin (1976); Kaske and Clark in Ficino (1989), pp. 45–7, 50–3, 84–5; Chapter 11.4. C, H of this book.

9 Carli (1979), pp. 6–9; Santi (1982), p. 1; Aronow (1985), pp. 240–57; Luccarelli (1992).

10 2Chron. 3:6; Luke 18:10, both cited in Ohly (1977), whom I follow for my description; see also Cust (1901), pp. 15–20; Carli (1979), pp. 9, 72–5.

11 Cust (1901), pp. 20–53; Carli (1979), pp. 20, 27–34; Ohly (1977), pp. 205–20; Santi (1982).

12 Lact. *Inst.* 1.6.1–4; 2.8, 10; 4.6; 7.18; Yates (1964), pp. 6–19, 41–3; introductions by J. Collins in Charlesworth (1983), pp. 317–453; Parke (1988); Dronke (1990); Copenhaver (1992a), pp. xxix–xxxii.

13 *Asclep.* 8 (304.20–5.9), 23 (325.4–9, 326.4–8), 24 (326.9–7.3), 37 (347.3–19, 347.14–8.14); *NHC*, pp. 330–8; Lact. *Inst.* 4.6.3–4; *Epit.* 37.5; Aug. *Civ.* 8.23–4, 26; Scott (1924–36), II, 32, III, 46–8, IV, 15–16, 20, 155, 158–9, 179–91; Yates (1964), pp. 7–8; Siniscalco (1966–7); Mahé (1978–82), II, 147–207; Copenhaver (1992a), pp. xliii–iv, 213–14, 222, 236–42, 254–5.

14 Cic. *ND* 3.56; Lact. *Inst.* 1.6.2; Aug. *Civ.* 18.39; Cust (1901), p. 22; Scott (1924–36), I, 32–3, IV, 9, 190–1; Yates (1964), pp. 42–3; Ohly (1977), pp. 206–7, citing Acts 7:22; Santi (1982), p. 22; Garin (1988), p. 64; Dronke (1990), pp. 5, 34; cf. Allen (1995b), p. 38; Bussagli (1983–4), p. 208.

15 John 1:1; *C.H.* 1.12, also 1.6, 8.2, 9.8, 10.12–13; Lact. *Inst.* 4.8.8–9, 9.1–3; *Epit.* 37.2; Ficino (1471), fol. 7^{r}.

16 Lact. *Inst.* 4.6.5–9, with Dronke (1990), p. 3–8, 34, n. 8, citing *Inst.* 1.6.16; 4.6.5, 15.24, 16.17, 18.15–17, 19–20, 19.5, 10; 7.16.11, 20.3, 23.4; Ogilvie (1978), pp. 82–3.

17 Yates (1964), pp. 6–12; Allen (1995b), pp. 38–41, 46.

18 Tert. *An.* 33; Arnob. *Adv. nat.* 2.13; Cyr. Alex. *C. Jul.* 548B, 556A; Aug. *Faust.* 13.1–2, 15, 17; *Civ.* 18.23; *C.H.* IV, 104, 125–44; Scott (1924–36), IV, 3–8, 191–227; Copenhaver (1992a), pp. xxix–xxxii, xlii–iv, 104–5, 107, 115–16, 164–6, 214; cf. Moreschini (2011), pp. 28–31, 36.

19 Rom. 31:21–3; Aug. *Civ.* 8.23; Scott (1924–36), IV, 181, 195; Moreschini (2011), pp. 74–9.

20 Lact. *Inst.* 2.8.48, 68; 2.10.14, 15.6; 4.7.3, 8.5, 9.3; 6.25.10-12; 7.4.3, 9.11, 13.3; Scott (1924–36), IV, 11–19, 22; Trinkaus, I, 183–4, 239, 241–2, 396; Moreschini (2011), pp. 33–48.

21 *Asclep.* 24–7 (326.15–33.4, esp. 330.1–31.4); Lact. *Inst.* 2.14.5–6, 15.6–8; 7.15.7–11, 18.1–4; Aug. *Civ.* 8.23–4; Scott (1924–36), IV, 25–7; Copenhaver (1992a), pp. 238–44.

22 *Asclep.* 23 (325.16–26.8), 24 (326.9–27.7), 25 (329.14), 37–8 (347.8–19, 349.2–8); Aug. *Civ.* 18.23, cf. Yates (1964), p. 11; Copenhaver (1992a), pp. 80–2, 89–90, 238–40, 254–7; Van den Kerchove (2012), pp. 185–222.

23 Aug. *Civ.* 18.23; Ficino (1471), fols. 2^{r}–4; (1959), pp. 29, 50, 84, 1836; see Section 5 of this chapter for Ficino's comments on *The Book of Twenty-Four Philosophers*, one of the medieval Hermetic pseudepigrapha.

24 Lact. *Inst*. 1.6.1–3, 7.13.3–4; *Epit*. 4; Aug. *Civ*. 18.39; Cic. *ND* 3.56; cf. Ov. *Met*. 1.713–28.

25 Lact. *Inst*. 1.6.3; Pl. *Plt*. 290D–91C; cf. *Tim*. 24A–B; *Phdr*. 274C–5B; Plu. *De Is.* 354B; Allen (1995b), pp. 40–1.

26 For this early statement of Ficino's theory of history – the 'ancient theology' – besides the passages cited from Lactantius and Augustine, see Procl. *TP* 1.5; *In Tim*. 77.15–23; Euseb. *PE* 5.4.1, 5.1; Clem. Alex. *Strom*. 3.3.16.2–17.1; Plu. *De Is*. 362E; *Def. orac*. 414A; Kristeller (1964), p. 15; Yates (1964), pp. 14–15; Walker (1972), p. 13; Hankins (1990), I, 282, II, 462–3; and Sebastiano Gentile's introduction in Ficino (1990-) I, xiv–xxi.

27 *C.H.* 1.5–6, 9, 12, 17–18, 22–6; 2.17; 4.4–5; 8.4; 10.8, 20–2; 11.2; 12.3–4; 13.6-10–15; *Asclep*. 8, 13, 17, 24–9, 31; Lact. *Inst*. 1.6.4, 4.6.4, 7.13.4; *Epit*. 37.4; Aug. *Civ*. 8.23.

28 For the circumstances, see Ficino (1959), p. 1537; Kristeller (1956), p. 223; Field (1988), pp. 16–17, 107–12, 198; Gentile (1990), pp. 72–3, 82–3; Gentile in Ficino (1990-), I, xxiii–ix, xxxiii–xlv; Hankins (1990), I, 269–83. Starting in the ninth century, the *Asclepius* circulated as a philosophical work by Apuleius in a northern manuscript tradition separate from the Italian descent of the literary works. Augustine's attack on Hermes (*Civ*. 8.23) follows criticisms of Apuleius, to whom he does not attribute the Latin text of the *Asclepius*, though he recognizes it as a translation: Scott (1924–36), I, 78–99, IV, 180; *C.H.* II, 259; Reynolds (1986), pp. 15–18; Copenhaver (1992a), pp. 213–14.

29 Iambl. *Myst*. 265.11–16, 267–72, says that texts "transmitted as writings of Hermes contain such beliefs, although they often use the language of the philosophers, for they were translated from the Egyptian tongue by men not without skill in philosophy," making the same point about translation as *C.H.* 16.1–2, though that discourse was not in Ficino's manuscript: Copenhaver (1992a), pp. xl, 110, 200–3, 236; Allen (1995b), pp. 45–6; Chapter 4.1, 3 of this book.

30 MS Laurenziana lxxi, 33, which Ficino used for his translation, contains only the first fourteen of the seventeen discourses now regarded as the main body of the Greek Corpus Hermeticum, though other large fragments are preserved in the *Anthology* of Stobaeus: see Chapter 5.1 of this book, for example. At *C.H.* 1.2, the first speaker of the first discourse calls himself 'Poimandres'; Hermes is not named outside the title of *C.H.* 1. Asclepius enters in *C.H.* 2.1, Tat in 4.3. For Ficino's manuscript, see Gentile, Niccoli, and Viti (1984), pp. 37–8; also Garin (1988), pp. 8–9; Copenhaver (1992a), pp. xl–xlv, 94, 124–5, 133, 200, 203–4.

31 *C.H.* 1.1–6, 27–9.

32 *Asclep*. 24.

33 Chapter 11 of this book, esp. 4.B, and Chapter 12. 1–2.

34 Cyr. Alex. *C. Jul*. 548B, 556A.

35 Plot. *Enn.* 2.9; Lact. *Inst.* 1.6.4; Ficino (1959), pp. 1663–73; Yates (1964), pp. 2–6, 20–1, 398–403; Purnell (1976); Grafton (1991), pp. 145–77; Copenhaver (1992a), pp. xxiii–iv, li–lviii, 94, 112.

36 *C.H.* 1.8–9, 10.2; *Asclep.* 7–8, 11, 14, 16, 19–20, 22, 25–6, 34, 36, 40–1, for the words *volo* and *voluntas*; *boulê, boulêsis, boulomai, ethelô, thelêma, thelêsis* and related forms occur about 70 times in the discourses translated by Ficino, more than half of them in *C.H.* 1 and 13; Ficino (1959), pp. 108, 398, 400, 488, 1594; Nock in *C.H.,* II, 259–95; Delatte, Govaerts and Denooz (1977), pp. 346–7; Copenhaver (1992a), pp. 2, 30, 102–5, 156, 214, 222, 233, 244.

37 LXX Ps. 32:11, 72:24; Prov. 8:12; Wisd. 9:13; Isa. 46:10, where the Vulgate always has *consilium* rather than *voluntas*, except at Ps. 72:24; *Orac. chald.* 37.1–3, 77.2, 81.2, 107.4, 217.4 (Des Places); Dodd (1935), pp. 103, 126–32; Lewy (2011), pp. 329–32.

38 *Asclep.* 26–7 (331.17–21, 332.1–6); Ficino (1971), fol. 6^{r}; (2011), p. 9.

39 *Asclep.* 23, 28: other words for 'power,' including *vis, virtus*, and *numen*, are more frequent than *potestas*; *prudens*, and *prudentia*, perhaps meaning 'wise' and 'wisdom' as *sophia* or *sôphrosunê,* appear seven times in *Asclep.* 16, 22, 24–5, 29 and 34: see Delatte, Govaerts and Denooz (1977), pp. 314, 321, 329, 345.

40 *C.H.* 1.7, 24–7, 31; 13.2, 6, 8–9, 11–12, 14–15, 17–19; Ficino (1471), fol. 10^{v}; (2011), p. 17; Delatte, Govaerts, and Denooz (1977), pp. 50–1; Copenhaver (1992a), pp. 118–20.

41 *C.H.* 1.31; Ficino (1471), fol. 11^{v}; (2011), p. 19; Copenhaver (1992a), pp. 121–3.

42 *C.H.* 1.29; 3.1, 4; 6.1; 11.2–4; 13.2, 6; 14.3; Ficino (1471), fol. 11^{r}, 37^{v}–8^{r}; Delatte, Govaerts, and Denooz (1977), p. 168; Copenhaver (1992a), pp. 37–8, 117–18, 134, 167–8, 183–4, 194–6, 199.

43 *C.H.* 13.1–2; Ficino (1471), fol. 50^{v}; (2011), pp. 95–6; Copenhaver (1992a), p. 49.

44 LXX Prov. 9:1–6; Wisd. 9:9–18; *Orac. chald.* 16, 30 (Des Places); Dodd (1935), pp. 130–1, 207, 217–18, 230, 242; Pagels (1979), pp. 50–4; Layton (1987), pp. 281–90; Copenhaver (1992a), pp. 121, 168, 183–4.

45 *Asclep.* 10–11 (308.22–310.15), 16 (315.2–16), 34 (344.19–45.2), 41 (354.4–55.1); *Liber Alcidi* 4.11, in Lucentini (1984), pp. 116–17; MS Riccardiana 709, described and partly transcribed in Gentile (1983), pp. 73–7, shows the date May, 1456, in Ficino's hand on a copy of *Asclep.* 36–41, with notes from Lactantius, Cicero, and Augustine; Ficino (1959), pp. 612, 987, 991; Kristeller (1937), pp. cxv, clix, 132–3; Gentile (1983), pp. 35, 40–2; (1990), p. 58; Allen (1990), p. 38; Moreschini (2011), pp. 134–9.

46 *Asclep.* 6 (302.1-2) is probably the text in play at Ficino (1959), p. 758, noting that "Mercury, wisest of the Egyptians, said that humans become gods by the light of philosophy"; see also *C.H.* 1.24–7 and Ficino (1959), p. 310. For the twelfth century background see Gregory (1988); Copenhaver (1993), p. 172, n. 61.

47 *Asclep.* 14 (312.20–1), 16 (315.11–15), 20 (321.12), 26 (330.3–4, 331.11–21); Baeumker (1913), pp. 207–14, esp. 211: *Deus est cuius voluntas deificae potentiae et sapientiae adaequatur*; Ficino (1959), pp. 403, 488; Kristeller (1937), pp. 134–7; Moreschini (2011), pp. 134–5.

48 Pl. *Epin.* 986C; Lact. *Inst.* 4.8.9; *Epit.* 37.1–9; cf. Scott (1924–36), IV, 20, on Pl. *Tim.* 28C, 98C; Garin (1988), pp. 36–8; Gregory (1988), pp. 75–9; Copenhaver (1992a), p. xlvii; Moreschini (2011), pp. 45–7.

49 *Suda* E.3038; *Liber Alcidi* in Lucentini (1984), pp. cii–iii; Moreschini (2011), pp. 79–82, 127–8, 128–31; n. 18 in this chapter.

50 LXX Gen. 1:22, 28; 8:15–17; 9:7; *C.H.* 1.18, 3.3; Psellus in *C.H.* I, pp. xviii–xix, xlix; Ficino (1471), fol. 8^{v}; (2011), p. 13; Scott (1924–36), II, 53, IV, 244–5; Dodd (1935), pp. 162–7, 227–30; Copenhaver (1992a), p. 112; Moreschini (2011), pp. 128–31.

51 LXX Gen. 1:2, 2:5, 4:14; Cyr. Alex. *C. Jul.* 552D; *C.H.* 1.5; Ficino (1471), fol. 5^{v}; (2011), p. 8; cf. (1959), p. 1257; Dodd (1935), pp. 121–5; Copenhaver (1992a), pp. 100–101, 104–5.

52 *C.H.* 1.6; Ficino (1471), fol 6^{r}; (2011), p. 9.

53 *C.H.* 1.8–9, 12, 15, 30; 5.7; (2011), p. 9; *Asclep.* 20; Dodd (1935), p. 151; Lewy (2011), p. 341; Copenhaver (1992a), pp. 103, 110, 121, 234.

54 *C.H.* 1.9, 12; *Asclep.* 20 (321.9–11); Ficino (1471), fol. 6^{v}, 7^{r}; (2011), pp. 9–10.

55 Pl. *Tim.* 37C, 41A, 42E, 68E, 69C; John 1:4, 8:12; 2Tim. 1:10; *C.H.* 1.5, 9, 12–13, 17, 21, 32; 4.1; 5.8; 8.2; 9.5; 10.18; 13.9, 18–19; *Asclep.* 19, 25–6; *Orac. chald.* 5, 7, 33 (Des Places); Cyr. Alex. *C. Jul.* 552D; Ficino (1959), p. 18; Dodd (1935), pp. 115–21, 133–8; (1953), pp. 17–19, 27–44, 201–5; Festugière (1944), pp. 261–2; Braun (1964), pp. 291–5; Trinkaus (1970), II, 739; Allen (1987); Copenhaver (1992a), pp. 97–105, 108, 117–18, 121–3, 131, 157–8, 170, 189–90, 199, 237, 243–4, 247–8; Lewy (2011), pp. 181–2.

56 *C.H.* 1.14–15; Ficino (1471), fol. 7^{v}; (2011), pp. 11–12.

57 C.H. 1.9, 12, 15, 22, 26-9 32; 3.2; 4.4; 5.6–7; 6.4; 7.1-2; 8.2; 9.4–10; 12.5–9; 13.1; Ficino (1959), p. 113; (2001–6), pp. 204-6; Gentile, Nicoli, and Viti (1984), p. 9; Allen (1984b); (1987), pp. 417–35; Hankins (1990), I, 356–8, II, 460; Copenhaver (1992a), pp. xxxix, 100, 104–5, 108–10, 114, 119–20, 123, 130, 133–5, 140–1, 144–7, 151–4, 170, 173, 180–3, 198–9, 243–4.

58 Ficino (1959), pp. 25, 29, 156, 268, 298, 386, 634, 758, 854, 871, 1223, 1233, 1537, 1945 for Hermes as an ancient theologian; Hermes is classified less exactly at pp. 29, 50, 227, 394, 421, 430, 440, 548, 612, 634, 645, 724, 759, 1015, 1134–5, 1256, 1309, 1322, 1499.

59 Ficino (1959), pp. 295, 420, 440, 540–1, 548, 571, 1309, 1388 on the god-making passages of the *Asclepius* or on medieval Hermetica; 293, 298, 871, 1501, 1613 for other mentions of magic; Copenhaver (1992a), pp. xxxii–iii; Chapter 5.1 of this book.

60 *C.H.* 1.23–4; 2.14, 17; 4.8; 9.3, 5; 10.7, 19, 21, 23; 12.1, 8–9, 13, 21; *Asclep.* 4–6, 25, 28, 33, 37; Ficino (1959), pp. 310, 419–21, 440, 548, 571, 1235–6, 1309, 1388,

1755 on demons; pp. 50, 303, 310–11, 391, 396, 404, 650–1, 758–9, 779, 990–1, 1491, 1630 on man; pp. 122, 156, 227, 396, 404, 417, 419–20, 502, 650–1, 682, 1630 on God.

61 Ficino (1959), pp. 310, 419, 1236, 1388, 1491, 1755; Trinkaus (1970), II, 490–1; Allen (1984a), pp. 35–40; (1989), pp. 168–210; (1990), pp. 40–1; (1995c).

62 Ficino (1959), pp. 295, 420, 1309; Trinkaus (1970), II, 482.

63 Ficino (1959), pp. 440, 548, 561, 571; (1989), pp. 306–7, 351, 390–3, 441, 452, 457–8; Walker (2000), pp. 41, 48–51; Allen (1995b), p. 44.

64 Ficino (1959), p. 1388; Allen (1995b), pp. 44–5; Chapter 9.4 of this book.

65 Aug. *Civ*. 8.23; Campanelli in Ficino (2011), p. xxxix; for a different view of Ficino's attitude toward Hermes and magic, see Moreschini (2011), pp. 146–55. Professor Moreschini's very learned and valuable book treats 'Hermetism' – on the model of 'Platonism' or 'Aristotelianism' – as if it were the name of a distinct body of thought with its own principles and internal consistency. I doubt that Ficino and other Quattrocento readers of the notoriously incoherent Hermetica had any such thing in mind. Also, "Copenhaver … thinks he can clear Ficino of the charge of magic," according to Moreschini. On the contrary, I claim that *De vita 3*, the core of Ficino's most widely read book, *promotes* magic, but in an ambiguous way, not least by evasive criticisms of one Hermetic text, the *Asclepius*. "The opinion of Copenhaver … seems to us too radical," Moreschini writes: "Ficino's interest in Hermetism does not pass away." Though I have my doubts about the very idea of 'Hermetism,' I have shown – in this chapter and elsewhere – that Ficino's comments on Hermetic texts continue throughout his career, from the juvenilia to the late commentary on Romans. A correct characterization by Moreschini of my position is "that the *Hermetica* furnished Ficino with a justification for believing in magic that was more of a genealogical or historical than a theoretical kind."

9. HERMES DOMESTICATED

1 *PGM* 7.559 (Betz [1986], p. 133).

2 *PGM* 5.370–446, 7.540–78, 919–24 (Betz [1986], pp. 107–9, 133, 142); Boylan (1922); Copenhaver (1992a), pp. xiii–xvi, xxxii–xl.

3 *PGM* 3.583–610 (Betz [1986], pp. 33–4); *NHC* 6.6.52.1–65.7 (Robinson, pp. 321–9); Reitzenstein (1904), pp. 146–54; Copenhaver (1992a), p. 259.

4 *Asclep*. 21–9, 41 (322.15–36.2, 353.1–55.12); *NHC* 6.6.65.15–78.43 (Robinson, 1988, pp. 330–38); Mahé (1978–82), II, 147–207; Betz (1986), pp. xli–xliv; Robinson in *NHC*, pp. 22–6; Copenhaver (1992a), pp. 79–84, 92, 234–5.

5 Lorenzo de' Medici (1965), pp. 96–7; Bonardi (1894), p. 80; Rochon (1963), p. 603.

6 *Asclep*. 23–4, 37–8; Nock in *C.H.,* I, v; Festugière (1950–4), I, 85; Copenhaver (1992a), pp. xliii–v, li–lix; Chapters 4 and 8 of this book.

7 Yates (1964), pp. 432–51; Garin (1988), pp. 27, 74–6; cf. Chapter 8 of this book.
8 Salutati (1891–1911), II, 182–91; (1947); Bruni (1976), pp. 44–56; Garin (1958), pp. 98–103; Lucentini (1984), pp. xx–xxiii, xliv, li, xcvii; Copenhaver (1992a), pp. xlv–xlvii; Van Bladel (2009); Chapter 8.5–6 of this book.
9 Garin (1958), pp. 62–4; Yates (1964), pp. 14–15; Walker (1972), pp. 1–21; Hankins (1990), I, 282–7, II, 460–4; Chapter 8.5–6 of this book.
10 Chapter 8. 4–6 of this book.
11 Chapter 8.1–3 of this book.
12 Santi (1982), p. 23; Bussagli (1983–4); cf. Chapter 8 of this book.
13 Baeumker (1913), pp. 207–14; Gundel (1936); Festugière (1950–4), I, 89–186; (1967), pp. 30–1; Fowden (1986), pp. xvi, 1–4, 57–9, 76–9, 87–95, 120–6, 140–1, 161213; Copenhaver (1992a), pp. xxxii–xl.
14 Gentile (1983), pp. 73–7; Gentile, Nicoli, and Viti (1984), pp. 5–7, 15–25, 40–1, 46–7; note 8 in this chapter.
15 Kristeller (1937), pp. clix–clxi; Tanturli (1978), pp. 227–8, 232–3, 240.
16 Kristeller (1937), p. 99; Marcel (1958), p. 257; Tanturli (1978), pp. 197–200, 208, 214, 226, 233; Field (1988), pp. 17, 112, 198.
17 *C.H.* 1.1–4, 27, 30; 13.1, 8, 15–16, 21–2; Ficino (1471), fols.2–4; Kristeller (1937), pp. 99–100; Tanturli (1978); Copenhaver (1992a), pp. 96–7, 119–21, 180–3, 188, 192–6.
18 Bonardi (1894), pp. 78–81; Bigi (1952–3), p. 166; Martelli (1965), pp. 121, 124; Gentile in Ficino (1990–), I, li, liv.
19 Boeth. *Cons.* 3 m. 9; Lorenzo (1965), pp. 91–5; Wilkins (1917–18); Rochon (1963), pp. 478–9, 601–2, 599–623, esp. 616; Chadwick (1981), pp. 232–6.
20 Lorenzo (1965), p. 95; Bigi (1952–3), pp. 155–9; (1954), pp. 23–5; Wadworth (1952–3); (1955); Kristeller (1956), pp. 213–19; (1965); Rochon (1963), pp. 475–543, 603, 605, 607–9; Martelli (1965), pp. 1–35, 108–25; Fubini (1984), pp. 37–8; Gentile in Ficino (1990–), I, l–li.
21 Lorenzo (1965), p. 101; Bonardi (1894), p. 81.
22 Boeth. *Cons.* 3.9; Rochon (1963), pp. 602, 608, 617; Chadwick (1981), pp. 233–4; Gregory (1988), pp. 56, 59–60, 68, 76–8.
23 *C.H.* 1.31–2; 13.17–20; *Asclep.* 41: the hymn not used is *C.H.* 5.11, arranged as a hymn in Norden (1971), p. 181; Gentile, Nicoli and Viti (1984) note that the Greek manuscript (BML, Laur. LXXI, 33, at fols. 125^{v}, 143^{v}) used by Ficino for his *Pimander* has his characteristic marks only in the margins of C.H. 1.31 and 13.17, both passages where hymns appear; the scribe of the Greek text highlighted the last passage with *humnôdia* written in red. See also Copenhaver (1992a), pp. 121–3, 141–2, 193–5, 258–60.
24 *Asclep.* 41 (353–4, 355.1–3); *PGM* 3.600–1, translated in Betz [1986], p. 34 as "while we are [still] in bodies you deified us by the knowledge of who you are"; Lorenzo (1965), p. 96; Rochon (1963), pp. 504, 6, 610–11; Copenhaver (1992a), p. 260.

25 *C.H.* 1.9, 15, 16, 18, where God is *arrenothêlus* ('androgyne'), rendered by Ficino (1471), fols.6*v*, 8, by *utriusque sexus fecunditate plenissimus* and other pleonasms; Ficino (2011), pp. 9, 12–13; *Asclep.* 41 (353–4, 355.6–7); *PGM* 3.604–5, translated in Betz p. 34 as "womb pregnant with the father's begetting … eternal continuation of the pregnant father"; Lorenzo (1965), p. 97; Copenhaver (1992a), pp. 103, 110, 121, 134, 234, 260; Chapter 8.5–6 of this book.

26 *C.H.* 1.31: the reading *emorphôsen* is clear in BML, Laur. LXXI, 33, fol. 125^{v}; see also Laur. XXVII, 9, fol. 14^{v}, which is a manuscript of Benci's *Pimander*; Ficino (1471), fol. 11^{v}; cf. (2011), p. 19, in Campanelli's excellent critical edition based on fifteen manuscripts, not on the uncritical – but perhaps more widely read – printed editions; Lorenzo (1965), p. 97; also Gentile, S. Nicoli and P. Viti (1984), pp. 41–3, 46–7; Kristeller (1937), lviii, cxxxi; Rochon (1963), p. 604; Copenhaver (1992a), pp. 105, 121–3.

27 *C.H.* 1.31: also clear in BML, Laur. LXXI, 33, fol. 125^{v} is *endunamôson me kai … phôtisô tous*; Laur. XXVII, 9, fol. 15^{r}; Ficino (1471), fol. 11v; (2011), p. 19; Lorenzo (1965), p. 98; Copenhaver (1992a), pp. 118–20, 188.

28 *C.H.* 13.17; BML, Laur. LXXI, 33, fol. 143^{v}; Laur. XXVII, 9, fol. 65^{v}; Ficino (1471), fol. 52; (2011), p. 103; Lorenzo (1965), pp. 99, 101; Rochon (1963), p. 604–5, 619; Copenhaver (1992a), pp. 122–3, 194–5, 258–9.

29 *C.H.* 13.18–19; BML, Laur. XXVII, 9, fols.65^{v}–66^{r}; Ficino (1471), fol. 53v; (2011), pp. 103–4; Lorenzo (1965), pp. 99–100; Copenhaver (1992a), pp. 118–20, 188–9, 193–4, 215–16.

30 *C.H.* 1.2, 13.15, 19; BML, Laur. LXXI, 33, fol. 144^{r}; Laur. XXVII, 9, fol. 66^{r}; cf. Ficino (1471), fols. 5^{r}, 52^{r}-53; (2011), p. 104; Lorenzo (1965), p. 100.

31 Rochon (1963), pp. 604–5.

32 Kristeller (1937), pp. 132–3, 137; Ficino (1959), pp. 987, 991; Baeumker (1913), pp. 201–3; Rochon (1963), p. 617; Gentile (1983), pp. 41–3, 73; (1990), p. 58; Allen (1990), p. 38.

33 Kristeller (1937), p. 134; Baeumker (1913), p. 208; Ficino (1959), pp. 403, cf. 1324–5; (2001–6), VI, 100; Moreschini (2011), pp. 134–9.

34 Ficino (1959), pp. 295, 420, 440, 548, 561, 571–4, 1309; (1989), pp. 306–7, 350–1, 390–401, 441, 452, 457–60; Kristeller (1937), pp. lxxii, cxvi–xvii, cxlvii–cliii; Walker (2000), pp. 41, 48–51; Allen (1990), p. 44.

35 Pl. *Apol.* 21A–E, 23A–B, 24C, 26B, 27C–E, 28A, 31D, 40A; Plot. *Enn.* 4.4.40, 43, 44, esp. 44.29–30; Ficino (1959), pp. 570, 1388; cf. (1989), pp. 384–5, 457; Allen (1990), pp. 44–5.

36 Allen (1984), pp. 3–67, 113–42; (1989), chaps. 4–5; (1995c); Chapter 5.3–4 of this book.

37 Burckhardt (1989), pp. 422–553, esp. 552–3; also Rochon (1963), pp. 612–13, 628, n. 108; cf. Buck (1936), p. 71.

38 Parthey (1854); Copenhaver (1992a), pp. xxxix, li, lv.

39 Marcel (1958), pp. 420–33; Rochon (1963), pp. 459–61; Gentile in Ficino (1990–), I, xlvii, lxii; Gentile (1981); Fubini (1984), (1987).

40 Ficino (1990–), I, 146–8; Kristeller (1937), p. lxxvii.
41 Kristeller (1937), p. 96; Garin (1988), pp. 7–8; Campanelli in Ficino (2011), pp. lxii–lxv.

10. HERMES ON PARADE

1 Lodovico Lazzarelli in Hanegraaff and Bouthoorn (2005), pp. 160–1.
2 Cecco d'Ascoli (1971); Thorndike (1923–58), II, 948–68; (1949), pp. 345, 347, 388, 404–5, 408; Alessandrini (1955); Federici Vescovini (2008), pp. 277–305.
3 Rigo (2002), pp. 69–70.
4 Gal. *SMT* 6.3.10 (K 11.858–61); *Kyr.* 21 (55.96–102); Kroll (1898–1924), VIII.2, 169–70; Festugière (1950–4), I, 214–15; Lloyd (1979), pp. 32–9; Chapter 6.2, 5–6, 7.2 of this book.
5 *C.H.*, I, xi–xii; Copenhaver (1992a), pp. xl–xli; Rigo (2002), pp. 69–73.
6 Festugière (1950–4), I, 89–308; Fowden (1986), pp. 1–4; Copenhaver (1992a), pp. xxxii–vii, xlv–vii; Rigo (2002), p. 69.
7 Ruelle (1908), p. 251; Festugière (1950–4), I, 139–43; D'Ancona (1954); *Picatrix* (1986); Lippincott (1987), pp. 11, 40, 138–71; Warburg (1999b), pp. 563–96, 643; Rigo (2002), pp. 69–75; Chapters 8.1, 11.4.C, H of this book.
8 My account in this chapter of Lodovico Lazzarelli and Giovanni Mercurio relies on the excellent analysis by Wouter Hanegraaff in Hanegraaff and Bouthoorn (2005), which reviews the earlier bibliography exhaustively: see especially McDaniel (1941–2); Kristeller (1956), pp. 221–57; (1960); Ruderman (1975); Saci (1999); Moreschini (2003).
9 Matt. 3:17, 12:18, 17:5; Mark 1:11; Luke 3:22; *C.H.* 1.6; *Asclep.* 8; Copenhaver (1992a), pp. 102, 222–3; Hanegraaff and Bouthoorn (2005), pp. 120–1, 142–3, 148–9, 180–1.
10 Hanegraaff and Bouthoorn (2005), pp. 27, 29, 136–7; Campanelli in Ficino (2011), pp. xlii–xliii.
11 Ruderman (1975); Hanegraaff and Bouthoorn (2005), pp. 32, 34, 38.
12 Marlowe, *Doctor Faustus*, 1.1.107; Copenhaver (1978), pp. 50–9, 169–70; Hanegraaff and Bouthoorn (2005), pp. 40–1, 44.
13 Hanegraaff and Bouthoorn (2005), pp. 46, 152–3.
14 Hanegraaff and Bouthoorn (2005), pp. 47, 158–9.
15 *C.H.* 3.3; 4.1–11; 13.1, 3, 4, 7, 10, 13–14, 22; Kramer (1992), fol. 1; Copenhaver (1992a), pp. 131–8, 180–96, 243–4; Hanegraaff and Bouthoorn (2005), pp. 55–7.
16 Copenhaver (2012); Chapter 11 of this book.
17 *C.H.* 12.2, 11, 13–15, 18–19, 21; 13.6–7, 12; Pico (1486), p. 21; Ficino in Gentile (1989), fol. 5; Copenhaver (1992a), pp. 45–53, 173–92; Lelli (2007), pp. 134–5.
18 Hanegraaff and Bouthoorn (2005), pp. 86–93.
19 Hanegraaff and Bouthoorn (2005), pp. 81, 256–7; Idel (2011), pp. 1–105, for a recent account of Abulafia and his influence in Italy.

20 *C.H.* 4, 16–18; *Asclep.*; Lazzarelli's *Crater* in Hanegraaff and Bouthoorn (2005), pp. 166–269.
21 Hanegraaff and Bouthoorn (2005), pp. 161, 168–9.
22 Hanegraaff and Bouthoorn (2005), pp. 61, 177–85.
23 Prov. 9:13–18; Hanegraaff and Bouthoorn (2005), pp. 64–5, 188–203, esp. 194–5.
24 *Asclep.* 24; Copenhaver (1992a), pp. 238–44; Hanegraaff and Bouthoorn (2005), pp. 65–7, 209–21.
25 Hanegraaff and Bouthoorn (2005), pp. 67–70, 228–41.
26 Hanegraaff and Bouthoorn (2005), pp. 248–69.
27 Hanegraaff and Bouthoorn (2005), pp. 84–6, 92–5, 103; cf. Walker (2000), pp. 68–71; Idel (1990), pp. 55–73, 96–113, 175–7; (2011), pp. 258–61.
28 Hanegraaff and Bouthoorn (2005), pp. 41–4, 271–9; see Chapter 14.8–9 of this book on gold-making as the main point of alchemy.
29 Hanegraaff and Bouthoorn (2005), pp. 84, 92; cf. Idel (2012), pp. 240–61.
30 Hanegraaff and Bouthoorn (2005), p. 103; Chapters 1.4, 2.6, 5.2, 6.7, 8.1, 12.5 n. 96, and 13.1 n. 11 of this book.
31 Garin (1937), pp. 194–208, with Gentile (1940), which was first published in 1916; Copenhaver (2002b), pp. 296–302.
32 Copenhaver (2002b), pp. 304–14; Copenhaver and Copenhaver (2012), pp. 118–46; Copenhaver (2012).
33 Hanegraaff and Bouthoorn (2005), pp. 166–7.

11. HOW TO DO MAGIC, AND WHY

1 Shakespeare, *Othello*, 1.3.91–2.
2 Frazer (1922); Thorndike (1923–58), IV, 562–73; Burckhardt (1989), p. 137; 'Magic,' in *Col En*, p. 1658: Frazer is the first of seven authorities cited by this entry, followed by Thorndike and Malinowski; see Chapters 1.2–3 and 15 in this book.
3 Marlowe, *Faustus* 1.1–64 (A Text).
4 Quotations from Ficino's *De vita* follow the Latin in Ficino (1989), the Kaske/Clark text, but the translations are mine; for editions and manuscripts, see Carole Kaske's introduction, pp. 6–12. The Italian bibliography on Ficino is immense; see especially the writings of Eugenio Garin, Cesare Vasoli, Paola Zambelli, and Giancarlo Zanier. For a summary of Ficino's life and works, see Allen (1999a); the standard accounts of Ficino's philosophy are Kristeller (1964a); Hankins (1990); and the many books and articles by Allen and Hankins on specific works and themes: especially Allen (1981), (1984), (1989), (1994), (1995a), 1998); Ficino (1975), (2008); Hankins (2003–4). Ficino's major work of philosophy, his *Platonic Theology*, can now be read in Ficino (2001–6), edited and translated by Allen and Hankins. For overviews of the philosophy of the period, see Copenhaver and Schmitt (1992); Hankins (2007a).

5 Shakespeare, *The Winter's Tale*, 5.3.110–11.
6 Porph. *Plot*. 1.
7 Park (1985), pp. 54–65, 199–209; Siraisi (1990), pp. 21–6, 48–77; Grendler (2002), pp. 3–40, 77–82, 314–28; Katinis (2007), pp. 78–83.
8 Ficino (1989), p. 190; Dsc. 1.109; Plin. *Nat*. 12.100, 13.18; "Myrobalans," in *EB* (1911), XIX, 114; Copenhaver (1991); and Chapters 5 and 7 of this book.
9 Ficino (1989), pp. 106, 136–40, 144, 148–50, 154, 158, 178, 184, 190–4, 202, 214, 218, 228–30, 246, 294, 300–2, 350, 508–10, with Kaske's introduction, pp. 7, 17–21.
10 Above, n. 13.
11 Ficino (1989), p. 110: I almost always use 'spirit' and 'spirits' to translate Ficino's *spiritus*, which almost always corresponds to the Greek *pneuma*. It is important not to confuse this odd material substance with the unusual immaterial persons called 'spirits' in English. The most important treatment of Ficino's *spiritus* is Walker (2000), pp. 3–59, 75–84.
12 Chaucer, *CT*, 1 pr. 411; Ficino (1989), p. 108; Siraisi (1990), p. 21.
13 Siraisi (1990), pp. 101–4.
14 Siraisi (1990), pp. 104–6.
15 Ficino (1989), p. 112.
16 Ficino (1989), pp. 112–14; classic accounts of melancholy are Burton (1972); and Klibansky, Panofsky, and Saxl (1964).
17 Ficino (1989), pp. 116–20.
18 Ficino (1989), pp. 118–22.
19 Ficino (1989), pp. 130, 134–6, 146, 150–2, 160–2; Siraisi (1990), pp. 121–2, 136–41.
20 Ficino (1989), pp. 122–38.
21 Ficino (1989), pp. 138–48, 156–60; Siraisi (1990), pp. 141–52.
22 Ficino (1989), p. 148.
23 Shakespeare, *Hamlet*, 3.2.259.
24 Rhazes (1544), p. 524: for the Italian text of Ficino's *Consilio*, see Katinis (2007), pp. 159–209, esp. p. 160, with the introduction by Katinis, pp. 115–18; the first edition appeared in Florence in 1481; see also Kaske's introduction to Ficino (1989) p. 25; Siraisi (1990), p. 123, 128, 209; Smoller (1994), pp. 76, 179 n. 103; Katinis (2007), pp. 116–18.
25 Siraisi (1990), pp. 128–30, 133–6.
26 Ficino (1989), pp. 102, 106; Park (1985), pp. 4–5; Connell (1999); Katinis (2007), pp. 93–6.
27 Ficino (1989), pp. 184, 228, 312, 326, with Kaske's introduction, pp. 6–8, 24–31.
28 Ficino (1989), pp. 188, 192, 196–8.
29 Ficino (1989), pp. 168, 172.
30 Ficino (1989), pp. 172–6.
31 Ficino (1989), pp. 174–8, 226: see the list of authorities in Kaske's second index in Ficino (1989), pp. 485–92; Siraisi (1990), pp. 68–9, 123–36.

32 Ficino (1989), p. 216.
33 Ficino (1989), pp. 208–12.
34 Ficino (1989), pp. 208–12.
35 Arist. *De an.* 423^{b}17-26; Eph. 6:11–12, which became "the world, the flesh and the devil" in the litany of the Anglican prayer book; Ficino (1989), pp. 220–4; Walker (2000), pp. 6–7.
36 Ficino (1989), p. 206; section 4.C, E–F in this chapter.
37 Ficino (1989), pp. 194, 228–30.
38 Ficino (1989), p. 194.
39 Ficino (1989), p. 232.
40 These definitions of 'stone,' 'amulet,' and 'talisman' are mine by stipulation, not anyone's normal usage; cf. Walker (2000), pp. 14–15; Katinis (2007), pp. 48–9.
41 Augustine, *Doctr. chr.* 2.23.36, 29.45; Aquinas, *SCG*, 3.2.104–5; Shakespeare, *As You Like It*, 5.2.59–60.
42 See Chapters 8 and 9 in this book.
43 Ficino (1989), p. 224: my account of messages, song, and music relies on Walker (2000); Tomlinson (1993), pp. 101–44, presents an important challenge to Walker's view and mine. My answer is that Ficino cites the chapter from Aquinas (*SCG* 3.105.2-6; see Chapter 6 in this book) which shows that the magician's words are invitations to demons just because they are signs that can only be addressed to a mind: "Magicians in their works use various vocal sounds that are meaningful and produce certain effects. But insofar as vocal sound is meaningful, it has no power except from some mind, either the mind of the one speaking or the mind of the one to whom it is spoken.... But it cannot be said that ... the effect is *from* the mind of the one speaking....What is left, then, is that actions of this sort are accomplished through some mind *to which* the speech of the one speaking the vocal sounds ...is directed. A sign of this is that the meaningful vocal sounds used by magicians are appeals, entreaties, promises or even commands, as of one person addressing another."
44 Shakespeare, *The Tempest*, 5.1.50–1.
45 Ficino (1989), p. 318: on Proclus, see Chapter 5.2–3 in this book; Copenhaver (1988b), pp. 102–10; Walker (2000), pp. 36–7; Siorvanes (1996), pp. 51–6. On the ancient theology, see Yates (1964), pp. 1–43; Walker (1972), pp. 1–21; Copenhaver (1993), (1994), (2009); Allen (1998), pp. 24–49; Chapters 8–10 of this book.
46 Wallis (1972), pp. 110–34; Copenhaver (1987a), pp. 452–5; Chapters 3–5 of this book.
47 Ficino (1989), p. 318; Chapter 5.3.3 in this book: Clark (1997), examines demonology from the point of view of witchcraft, mainly after Ficino's time; for gods, idols, and demons in earlier times, see Flint (1991), pp. 3–35, 204–16; Kieckheffer (1990), pp. 8–28, 102–5; Siorvanes (1996), pp. 264–71.

48 Ficino (1989), pp. 232, 236–8, 242, 278, 320, 384, 388; Chapters 3–7 in this book.
49 Plot. *Enn.* 4.3.11; *Asclep.*23–4, 37–8, in Copenhaver (1992a), pp. xxxviii, 62, 80–1, 89–90, 208, 236–41, 254–7; Chapter 3.2 in this book.
50 Ficino (1989), pp. 396–8.
51 Ficino (1989), pp. 208–10, 281, 300, 399.
52 Shakespeare, *Othello* 1.3.61.
53 Above, n. 61; Chapters 8–10 in this book.
54 Ficino (1989), pp. 134, 276, 306, 312: one of these references is to the material on statues from the *Asclepius* mentioned in n. 49 of this Chapter; only one of the others might conceivably come from the *Corpus Hermeticum*; the other two cite 'technical' medieval Hermetica, which are catalogs of astrological, alchemical, and other recipes, not the 'theoretical' Hermetica for which Ficino admired Hermes; Copenhaver (1992a), pp. xxxii–xlv; cf. Walker (2000), pp. 40–1, 45; Yates (1964), pp. 20–61; Chapters 8–10 in this book.
55 Ficino (1989), p. 388; Walker (2000), *Magic*, p. 42.
56 Ficino (1989), p. 236: for Yates's views on Ficino's magic as Hermetic, see Yates (1964), pp. 1–83, and for my objections, see Copenhaver (1988b), (1990), (1992a), pp. xlv–lxi, (1993), (1994), and Chapters 1.4, 8–10 in this book; also Allen (1995b).
57 Ficino (1989), pp. 374, 382.
58 Ficino (1989), pp. 268, 290, 300, 348–50, 356; Plin.*Nat.* 10.12–13, 30–131, 36.149–51.
59 Ficino (1989), pp. 316, 336, and Kaske's notes, pp. 448–9, citing *Picatrix* (1986), pp. 82–3 (2.12.39, 44); Chapter 5.5 in this book. Leonine demons appear frequently on amulets, which Ficino could have seen, though the image shown here is Mithraic, from Vermaseren (1963), p. 119; see also Vermaseren (1956–60), 543; Ulansey (1989), pp. 46–54, explains that in its original context the sphere under the lion's feet is cosmic rather than solar, showing the intersection of the ecliptic with the celestial equator.
60 Porph. *Plot.* 10; Ficino (1989), pp. 324, 340, 350, 376; Allen (1995c); Chapter 7.1 in this book.
61 Ficino (1989), p. 244.
62 Ficino (1989), p. 242; Chapter 3.1 of this book.
63 Ficino (1989), pp. 244–6.
64 Ficino (1989), pp. 318, 390; Chapter 3.1, 4 of this book.
65 Procl. *De sacrificio*, in Chapter 5.3–4 of this book; Procl. *Elem. th.* 39, 71–2, 79, 140–5, 189, with notes by Dodds in Proclus (1963), pp. 208–9, 222–3, 263, 267, 344–5; Iamb. *Myst.* 2.11, 5.7, 12, 23; Ficino (1989), p. 308; Dodds (1951), pp. 287, 291–5; Siorvanes (1996), pp. 167–89; earlier, n. 62; Chapter 5.5 in this book.
66 Ficino (1989), pp. 254–6, 362–4, 376; see also Quinlan-McGrath (2013).
67 Ficino (1989), pp. 250, 254–8.

68 Ficino (1989), pp. 318, 320–2, 368, 400; Chapter 6.2 in this book.
69 Ficino (1989), pp. 322–4, 354; Alkindi (1974); Barton (1994), pp. 98–102; Chapter 7.2 in this book.
70 Ficino (1989), pp. 244, 270–2.
71 Ficino (1989), pp. 326–32; Ficino in Katinis (2007), pp. 206–7, with the introduction by Katinis, 123–6.
72 Pl. *Phaed.* 85E-86D; Arist. *De an.* 407^{b}27-32; Plot. *Enn.* 4.4.41; Ficino (1989), pp. 356–62; Section 4.H of this chapter.
73 Aquinas, *ST* II–II.96.2 ad 2; Ficino (1989), p. 340; Chapter 6.3 of this book.
74 Aquinas, *SCG* 3.105.12; Section 4.D–E of this chapter.
75 Aquinas, *SCG* 3.92, 99, 104–5; *ST* I.65.4, 91.2, 110.1, 115.3; *De occ. op. nat.* 9–11, 14, 17–20; [*De fato*] 5; Ficino (1989), pp. 280, 318, 328–30, also 340, 382, 390; Walker (2000), pp. 42–4.
76 Ficino (1989), pp. 384–6; Plot. *Enn.*4.4.40, 43–4; Chapters 3–5 of this book.
77 Ficino (1989), pp. 384, 386; Proclus, *De sacrificio*, in Chapter 5.3.3–4 of this book.
78 Ficino (1989), p. 388; Sections 4.C, E–F of this chapter.
79 Ficino (1989), pp. 354–6; Walker (2000), p. 15.
80 Ficino (1989), pp. 354–6.
81 Ficino (1989), pp. 358–60.
82 Ficino (1989), p. 360; Sections 3.C–D, 4.E of this chapter.
83 Ficino (1989), pp. 360, 364, 368; Walker (2000), pp. 17–18.
84 Iamb. *Myst.* 57.4–58.8; 271.10-12; Ficino (1989), pp. 244, 388; Shakespeare, *1 Henry IV*, 3.1.53–5; Shaw (1995), pp. 89, 133–42, 150–61; cf. Walker (2000), pp. 45–53; Section 3.C of this chapter.
85 Ficino (1989), p. 370; Iamb. *Myst.* 278.15–284.10; Firm. *Math.* 2.25.2–3: "When you carefully inspect the Life-Giver – the Lord of Geniture, in other words – seeing in what place it is sited, and in what sort of a sign, … you will easily be able to define the content of the whole life.… If Saturn is the Life-Giver and is sound, he decrees 57 as the number of years." Michael Allen has illuminated many cases of Ficino's philosophical uses of the elaborate Neoplatonic theologies, but see especially Allen (1981) and (1984); also Lamberton (1986); Brisson (2004).
86 Shakespeare, *The Tempest*, 4.1.164–5; Shakespeare (1964), pp. 142–5.
87 Iamb. *Myst.* 32.8–33.11; Ficino (1989), p. 388; Chapter 4.3 of this book.
88 Ficino (1989), pp. 248, 276, 278–80, 354, 362–8.
89 Ficino (1989), pp. 280, 342; Walker (2000), p. 53.
90 Ficino (1989), pp. 354, 380, 394, 396; Katinis (2007), p. 115.
91 Ficino (1989), p. 354; Walker (2000), pp. 25, 30.
92 Shakespeare, *Macbeth*, 3.5.23-9; for a recent view of Ficino's stance on magic, see Klaasen (2013), pp. 189–99.
93 Shakespeare, *Othello*, 3.4.69.

94 Marlowe, *Faustus* 2.157–66 (A Text); for the Latin text of MS Munich, Bayerische Staatsbibliothek, *Codex latinus monacensis* (Clm) 849, see Kieckheffer (1997), pp. 190–377, with Kieckheffer's introduction, pp. 3, 12.
95 Kieckheffer (1997), pp. 24–30, 34–9.
96 Clm 849, in Kieckheffer (1997), pp. 208–11, with Kieckheffer's introduction on pp. 47–50.
97 Clm 849, in Kieckheffer (1997), pp. 256–69, with Kieckheffer's introduction on pp. 8–10.
98 Clm 849, in Kieckheffer (1997), pp. 276–85, with Kieckheffer's introduction on pp. 142–7.
99 Allen (1995c); Sections 3.C and 4.H in this chapter.
100 Allen (1987); (1994), pp. 81–105; (1999b).
101 Allen (2009).
102 Allen (1989), pp. 83–116, 168–204.
103 Allen (1993); Chapter 5.4 in this book.
104 Hankins (2007b); Shakespeare, *1 Henry VI*, 1.1.25–7.
105 Allen (1998), pp. 151–92; (2002a).
106 Hom. *Il*. 8.19; *Orac. chald*. 96, 158; Allen (2007), pp. 58–60; (2008), pp. 45–7.
107 Allen (1994).

12. NATURE, MAGIC, AND THE ART OF PICTURING

1 Shakespeare, *Hamlet*, 3.4.53.
2 On mimesis, erudition, and science, see Foucault (1966), pp. 32–59; Gouhier (1958); Grafton (1989); (1991), pp. 1–22; Joy (1987); Copenhaver (1992b), pp. 403–7; and Chapter 13 of this book.
3 For a recent introduction to Pomponazzi, see Kraye (2010); for a bibliography, Perfetti (2012); also Kristeller (1964b), pp. 72–90; Pine (1986); Copenhaver (1992b), pp. 388–9; Copenhaver and Schmitt (1992), pp. 103–12. The major texts are Pomponazzi (1957), (1970), (1990), (2011), with translations by Vittoria Perrone Compagni in Pomponazzi (1999), (2004) and Henri Busson in Pomponazzi (1930).
4 In her introduction to Pomponazzi (2011), pp. x, xv, xxv, xxviii, Perrone Compagni writes that Pomponazzi's acquaintance with natural magic and his familiarity with Ficino's theory of magic "in no way imply any real interest on his part in the concepts that underlie the praxis of *De vita coelitus comparanda*"; see also Copenhaver and Schmitt (1992), pp. 107–9; Pomponazzi cites Ficino explicitly on pp. 18, 22–3, 99–100, 109 and 128 of his book *On Spells*.
5 Pomponazzi (2011), p. 155; Pine (1986), pp. 16–30, 61–3, 75–7, 94, 99–103, 123–4, 139, 254–65, 277, 286, 297–301, 307, 338–43, 346, 350–2, 360–8. Pomponazzi does not cite Nicole Oresme (1320–82), whose treatise *On the Causes of Wonders* makes a similar case for naturalism and against demons, while also rejecting

astrological influence and putting more restrictions on the imagination: see Oresme in Hansen (1985), especially the summary on p. 360.

6 Perrone Compagni's introduction to Pomponazzi (2011), pp. cxvii–cl; Pine (1986), pp. 235–74: Zanier (1975); influential praise for Pomponazzi in English came from Trevor-Roper (1956), pp. 131–2; and Cassirer (1964), pp. 80–3, 103–9, 136–41; see also Cassirer (1999), pp. 98–117.

7 Pomponazzi (2011), pp. 166–9, quoting 2Cor. 10:5.

8 Pomponazzi (2011), pp. 157–66, esp. 157; Kristeller (1983); Pine (1986), pp. 114, 236–43; Zambelli (1975), (1977), (1978); Zanier (1983).

9 Pomponazzi (2011), pp. 7–13, 45, with Perrone Compagni's introduction, pp. xix–xxi, xxv–xxvii; Renan (1861), pp. 354–8, was an admirer of Pomponazzi, followed by Busson (1933); Busson, introduction to Pomponazzi (1930); Charbonnel (1919); and Pintard (1943); cf. Headley (1990), pp. 168–9; Koyré (1966); Kristeller (1968), (1979); Popkin (2003), pp. 80–98; Chapter 13.1 of this book.

10 Pomponazzi (2011), pp. 56–7, 62, 109: for the theory, see Chapters 3–6 and 11 in this book; for the history, Chapters 8–10; and for the empirical evidence, Chapter 7; also Copenhaver (1990).

11 Pomponazzi (2011), pp. 68–9; Chapter 7 in this book.

12 Pomponazzi (2011), pp. 18, 28–9, 99–100, 101, 131; Chapter 7 in this book.

13 Pomponazzi (2011), pp. 28–9, with Perrone Compagni's introduction, pp. xix–xxiv.

14 Chapter 11.3.C, 4 of this book.

15 Pomponazzi (2011), pp. 29, 33, with Perrone Compagni's introduction, pp. xv, xxix–xxxiii; for the many mentions of Albert, see pp. 8, 18, 20, 30, 35–6, 56–7, 76, 83–4, 86, 96, 98, 100, 107, 109, 113, 131, 141, 144–6, 151; for Thomas, see pp. 48–9, 62, 100–3, 106, 116–17, 121, 126–8, 142–3, 160, 166: Averroes, Pliny, Plutarch, and especially Aristotle are also often named.

16 Pomponazzi (2011), pp. 72, 116, 127; Arist. *Ph.* $258^{a}2$–$58^{b}3$; *Gen. corr.* $336^{a}32$–$^{b}15$; also *Ph.* $194^{b}13$–15; *Cael.* $286^{a}7$–b5; *Metaph.* $1072^{a}21$–6; Litt (1963), pp. 99–148; Chapter 7.3–5 in this book.

17 Pomponazzi (2011), pp. 3–5, 12–13, 17.

18 Pomponazzi (2011), pp. 17–18; Pine (1986), pp. 241–5.

19 Pomponazzi (2011), pp. 7–12, 45, with Perrone Compagni's introduction, pp. xix–xx, xxv–xxvi.

20 Pomponazzi (2011), pp. 38–9, 45–8, 109–10; Pine (1986), pp. 245–6.

21 Pomponazzi (2011), pp. 27–8, with Perrone Compagni's introduction, pp. xxv–xxix.

22 Pomponazzi (2011), pp. 29–31, 47–8, with Perrone Compagni's introduction, pp. xxviii–xxxiii.

23 Pomponazzi (2011), pp. 13, 56, 62, 79–80, 108, 157–8.

24 Pomponazzi (2011), pp. 53, 77, 110–13, 160; Koyré (1966), pp. 39–42; n. 4 in this chapter; and Chapter 6 in this book.

25 For scholastic and Cartesian debates about the eucharist, see Armogathe (1977); Watson (1982); Redondi (1987), pp. 203–26, 272–86; Clarke (1989); Adams (2010); Chapter 14.6 of this book.
26 AT 3.420–1, 493, 505, 508; Boyle (1964), p. 200; Gassendi (1658), I, 273, II, 114; Mersenne (1624), pp. 450–5; Chapter 14 in this book.
27 Keynes (1947), pp. 27–9; Marcel (1958), pp. 15, 687; Dobbs (1975); Cohen and Schofield (1978), pp. 427, 436–7; Copenhaver (1978a), p. 31; Westfall (1980), pp. 281–309, 357–81, 524–37; Daston and Park (1988), pp. 176–7, 201–2, 210–14, 252–3, 316–68; Chapter 14.10 of this book.
28 Agrippa (1600), I, a2–6; Nauert (1965), pp. 30–3.
29 Agrippa (1600), II, 90–1; Walker (2000), pp. 90–6; Nauert (1965), pp. 59–60, 98–9, 106–15, 194–214, 335–8; Zambelli (1960a), pp. 144–5; (1960b), pp. 166–80; (1988), pp. 137–8; Müller-Jahncke (1973), pp. 7–53; Copenhaver (1987b), pp. 264–6; Klaasen (2013), pp. 207–13.
30 Agrippa (1600), I, 1–4, 153–6, 310–11; Klaasen (2013), pp. 199–201.
31 Agrippa (1600), I, 5–6, 18–19, 25–36, 40, 43–5, 68–70, 90–2, 128–38, 268, 276, 361, 436–9; Klaasen (2013), pp. 202–5. For a summary of opposing views on the relationship of popular to learned culture in witchcraft, see Ginzburg (1993); cf. Muchembled (1993). Highlights from the enormous literature are Cohn (1975); Ginzburg (1983), (1992); and Clark (1997); see also Chapter 15 of this book.
32 Zika (1976); Copenhaver (1999), (2002a), (2002b), (2007a), (2007b), (2011), (2012); Walker (2000), pp. 90–6; Rummel (2002); Chapter 11 of this book.
33 Agrippa (1651); Grafton (1992); Freedberg (2002), pp. 244–74; Chapter 14 of this book.
34 Rabelais, *Le Tiers livre*, 25; Marlowe, *Doctor Faustus*, 1.1.119 (A Text); Shakespeare, *The Tempest*, 5.1.57; Shakespeare (1964), pp. xxv, xl–li, 142–5; Pagel (1958), pp. 39, 203, 295–301; Yates (1964), pp. 196, 200–1, 239–44, 258–73, 317, 321–4; (1979), pp. 80–3; 116–20, 160; Muraro (1978), pp. 38–40, 48–51, 92–3; Webster (1982a), pp. 18–19, 27, 58–60, 79–86; cf. Webster (1982b), pp. 3–6; Blair (1997), pp. 128–9, 151; Walker (2000), pp. 96, 119, 155, 174, 180–3; Gaukroger (2001), pp. 105–8.
35 Agrippa (1600), I, 21–2, 25–6, 35–6, 39, 45, 47, 51, 57–8, 74, 77, 83, 334; Chapter 7 of this book.
36 Eamon (1994), pp. 15–90; Copenhaver (2000a), (2002a), (2007a), (2012); Chapters 11 and 12.1 of this book.
37 John 5:2–9; Agrippa (1600), I, 5–17.
38 Agrippa (1600), I, 19–22.
39 Agrippa (1600), I, 23–4, 50–1, 56–62.
40 Agrippa (1600), I, 57–67, 70–85.
41 Agrippa (1600), I, 28–38, 43–5, 136–8.
42 Agrippa (1600), I, 68–70, 272–3.

43 Agrippa (1600), I, 37, 50–2, 58, 69, 109, 142, 180, 185, 194, 199, 267–9, 272–4, 286–7, 363, 401; Ficino (1989), pp. 277, 311, 317–19, 335–6, 365–7, 381; Anon. (1974), p. 45; Thorndike (1923–58), I, 68, 70, 74–5, 231, 257–8, 391–2, 626, 765–6; II, 380–1, 418, 433, 562, 657–8, 668, 737, 967; III, 62–3, 114, 216, 452, 544, 641; IV, 36, 93–4, 181, 375, 428, 597–8, 602; George and Yap (1991), pp. 192–3, 199–203; Chapter 11.4.C of this book.

44 Vasari (1966–97), IV, 21; Thorndike (1923–58), V, 16–36; Gombrich (1954), pp. 200–102, 216–17; Garin (1965b), (1994b); Clark (1967), p. 19.

45 Richter (1939), II, 250–7 [1205–16]; Garin (1965c), pp. 69–77; (1994b), p. 395; Pedretti (1977), II, 251–7; Kemp (1981), pp. 103–4; Walker (2000), pp. 3–53; Chapter 11.4.E–H of this book.

46 Thomas (1971), pp. 212–52; Gordon (1987); Ashworth (1990); Kieckheffer (1990), pp. 16–17, 56–94; Grafton (1991), pp. 178–203; Eamon (1994); Céard (1996); Daston and Park (1998), pp. 67–75, 145, 199; Freedberg (2002), pp. 1–3, 186–94; Chapter 7 of this book.

47 Montaigne (1967), p. 413; Nauert (1979), pp. 72–85; (1980), pp. 304–16; Lloyd (1983), pp. 135–49; Beagon (1992), pp. 96–119, 144–7, 202–40; French (1994), pp. 196–255; Daston and Park (1998), pp. 24, 27, 63, 287; Chapter 7.6 of this book.

48 Eisenstein (1979), pp. 67–70, 254–72, 467–70, 485–8, 555–6; Betz (1986), pp. 17–23, 102, 125, 134, 143–50, 167–71, 268–99, 318–21; Kemp (1990); Braider (1993); Maguire (1995), pp. 51–71; Sawday (1995); Baigrie (1996); Field (1997); Camille (1998); Jones and Galison (1998); Klaasen (1998); Hassig (1999); Copenhaver (2000b); Collins (2000); Lefèvre, Renn, and Schoepflin (2003); Denery (2005); Givens, Reeds, and Touwaide (2006); Ogilvie (2006); Clark (2007); Kusukawa (2012).

49 Agrippa (1600), I, 33, 35–6, 40–1, 54, 75, 80, 103, 115; Pope-Hennessy (1966), pp. 101–5; Clark (1967), pp. 53–5; Anon. (1974), pp. 16, 54, 56, 87, 111; Kemp (1981), pp. 199–200; George and Yap (1991), pp. 66–8; Marani (2003), pp. 169–83.

50 Richter (1939), I, 382 (670); II, 262 (1224), 264–5 (1231–2), 266–7 (1234, 1239); Solmi (1908), pp. 159, 165, 167; Anon. (1953), pp. 107–18; Clark (1967), pp. 68–70; Pedretti (1977), I, 382; II, 261–2; Daston and Park (1998), pp. 39–43, 52, 76.

51 Plin. *Nat.* 8.32, 77–8, 85–8; Landino (1476), book 8, chaps. 11–13, 21, 23–4 (unpaginated); Cecco d'Ascoli (1971), p. 125; Richter (1939), II, 268–71 (1240, 48–9), 270–4 (1248–9, 55, 57–8); Solmi (1908), pp. 119, 236–43; Thorndike (1923–58), II, 948–68; Alessandrini (1955); Pedretti (1977), II, 263–4; Nauert (1979), p. 316; Kemp (1981), pp. 152–7, 164–7, 281; Kemp and Roberts (1989), pp. 155–7.

52 Richter (1939), I, 108–9, 382–6 (670–8); Pedretti (1977), I, 76, 382–7; Popham (1945), pp. 32–8, 109, 112–13, 116–22, 125, plates 62, 80, 86–8, 104–14, 125; Thorndike, *History*, V, 19–23, 32–3; Clark (1967), pp. 68–74, 149, 161; Lee

(1967), p. 33, n. 135; Zubov (1968), pp. 268–70; Kemp and Roberts (1989), pp. 158–60; George and Yap (1991), pp. 89–90, 200–3; Grafton (1992), pp. 1–58; Romm (1992), pp. 20–4, 69–70, 77–120, 143; Edson (1997), pp. 79, 152, 160, plates II, IV, XI; Daston and Park (1998), pp. 25–32, 173–5; Gravestock (1999).

53 Introducing fifty pages of entries on Leonardo in the *DSB* – see Gillespie (1970–80) – the editor calls him "*sui generis* even in the context of the Renaissance.... It is anachronistic to ask whether he was a 'scientist.'... Although we may use the word 'science' for convenience, it is largely irrelevant to wonder what he contributed toward its development....The interesting matter is ...what Leonardo knew"; cf. Kemp and Walker (1989), pp. 9–46; Vasari (1966–97), IV, 19; Garin (1965b), p. 92.

54 Hor. *AP* 361; Richter (1939), I, 31–4 (1, 6), 33–5 (6–7a), 54–5 (20), 367–72 (651–62), II, 239–41 (1145–61); Garin (1965b), pp. 96–7; Lee (1967), pp. 6–7, 24, 48; Pedretti (1977), I, 369–72, II, 236–9; Kemp (1981), p. 98; Kemp and Walker (1989), pp. 10, 13–14, 18, 21, 35, 38, 40, 45–6.

55 Richter (1939), I, 35 (7), 52 (17); Lee (1967), pp. 56–61.

56 Vasari (1966–97), IV, 15–17, 23; Popham (1945), p. 141, pl. 205; Blunt (1962), 36–8; Clark (1967), pp. 32, 43–4, 74–8, 119–20; Kemp (1981), pp. 218, 270–3, 322–3.

57 Vasari (1966–97), IV, 21; Richter (1939), I, 342 (585); Blunt (1962), pp. 37–8; Garin (1965a), p. 92; Clark (1967), p. 224; Pedretti (1977), I, 349; Kemp and Walker (1989), p. 224.

58 Vasari (1966–97), IV, 34–5; Clark (1967), pp. 18–19.

59 Vasari (1966–97), IV, 22–5, 31; Popham (1954); Blunt (1962), pp. 26–31; Clark (1967), pp. 37–41, 86–9, 137–42; Lee (1967), p. 10; Kemp (1981), pp. 54–8; Kemp and Roberts (1989), pp. 23–65, 54, 66, 96, 145; Marani (2003), pp. 101–17; Pedretti and Roberts (1984); Turner (1992), pp. 22–9.

60 Hor. *AP* 1–5, 361; Richter (1939), I, 54–5 (19, 22); Gombrich (1954), pp. 201–6; Garin (1965b), pp. 88–9, 101–7; Blunt (1962), pp. 30–1; Lee (1967), pp. 34–48, 56–7; Bachelard (1967), pp. 23–54; Kemp and Walker (1989), pp. 26, 32, 37; Kemp and Roberts (1989), pp. 91, 164.

61 Foucault (1966), pp. 13–14, 34–59, 128–32; Gutting (1989), pp. 139–69; Copenhaver (1992b), pp. 403–7; Findlen (1994), pp. 48–70.

62 Kemp (1981), pp. 160–1, finds a place for inventive imagination in the science of Leonardo's time: see also Daston and Park (1998), pp. 248–51, 328–30, 348–50; Freedberg (2002), pp. 199–200, 213–14, 278, 283, 292, 297, 361–5.

63 The notion of *picturing* used here is adapted from its application by Alpers (1993) to Dutch art; Freedberg, *Lynx*, pp. 5–6, 284–6, stresses both the limitations of picturing and its importance for the Lincean Academy; see also Freedberg (1989), especially chapters 9 and 10; Jones and Galison (1998), especially the essays by Daston, Freedberg, Koerner, Park, Pomian, and Snyder.

64 Thorndike (1923–58) is a huge record of magical literature that fills eight volumes, two for the seventeenth century, but only six for the previous sixteen; see Chapter 14 of this book.

65 Plaut. *Mostell.*; Chaucer, "The Canon's Yeoman's Tale"; Mewe (1979); Duckworth (1952), pp. 72, 163–4, 400–1; Dandrey (1998), I, 107–48, II, 27–63; Jolibert (1999), pp. 17–41, 77–91; Bourqui (1999), pp. 136–43.

66 Molière, "Le Malade imaginaire," 1.1, 2.5, in Molière (1962), pp. 628, 642–3; Scott (2000), pp. 256–8.

67 Molière (1962), pp. 659–61.

68 Molière, "La Jalousie du Barbouillé," "Le Médecin volant," "Dépit amoreux," "Le Mariage forçé," "Dom Juan ou le festin de Pierre," "L'Amour médecin," "Le Médecin malgré lui," in Molière (1962), pp. 34–9, 41–2, 75, 84–6, 224, 227–3, 286, 315–21, 356–7, 361–2; Daston and Park (1998), pp. 215–20, 231–40, 255–90, 328–30, 348–50; Rowland (2000); Stolzenberg (2001), (2013); Chapter 14.4–9 in this book.

69 Fernel (1550) is the edition of *De abditis rerum causis* cited here.

70 Fernel (1581); Sherrington (1946); Granit (1970–80); Bianchi (1982); Richardson, (1985), pp. 175–94; Blum (1992), pp. 59–62; Bono (1995), pp. 85–103; Siraisi (1997), pp. 149–73; Forrester and Henry (2003), pp. 1–12.

71 Hipp. *Morb. Sacr.* 1–5, 18; Fernel (1550), pp. 5–7, 101, 109, 120, 153–6, 221–2, 292–3; Lloyd (1979), pp. 15–29.

72 Fernel (1550), pp. 156, 280–2, 304–5; Lloyd (1973), pp. 136–53; Bianchi (1982), pp. 187, 196–9, sees Fernel as opposing rather than adapting Galen's position.

73 Fernel (1550), pp. 1–5; Copenhaver (1978).

74 Fernel (1550), pp. 41–2, 97–8, 125, 151–5, 214–20, 280–92; Section 2 of this chapter.

75 Fernel (1550), pp. 17–23, 64–5, 82, 149–50, 159, 173–9, 204–26, 284, 294.

76 Fernel (1550), pp. 285–7: Molière, "Bene, bene, bene, bene respondere. / Dignus, dignus est entrare / in nostro docto corpore"; Fernel, "Hoc enim certe responso, docte videberis satisfecisse."

77 Arist. *De an.* $435^{a}11$–$^{b}25$; cf. *Sens.* $436^{b}13$–$37^{a}31$; *Metaph.* $980^{a}23$–7; Fernel (1550), pp. 10–13; AT, VI, 332; Galileo (1996), I, 298–316, 781; Scott (1952), pp. 71–81; Shea (1991), pp. 129–47, 205–18, 228–49; Freedberg (2002), p. 108: for the Aristotelian and scholastic background on visual, non-visual and haptic qualities, see Lindberg and Steneck (1972), II, 29–45.

78 [Gal.] *De affect. ren. insid. dign.* (K 19.643–98); Fernel (1550), pp. 153–55, 217–23, 235–6, 249; Röhr (1923), pp. 96–133.

79 Fernel (1550), pp. 151–6, 173–9; Lloyd (1973), pp. 141–3; Daston and Park (1998), pp. 292–3; Chapter 14.9–10 of this book.

80 Locke, *Essay*, 2.8.2, 7–10, 15, 17, 22–3, 26; Alexander (1985), pp. 115–22, 131–4, 150–67; Chapter 14.5–9 of this book.

81 Galileo (1996), I, 672; AT,VI, 93; Findlen (1994), pp. 214–15; Wilson (1995), pp. 142–65; Freedberg (2002), pp. 151–4, 160–3.
82 Lucr.2.112–41, says that "something small [the motes] can give an example of the large [atomic theory] and trace new knowledge;" AT,VIII, 187; Lüthy (2003).
83 Alpers (1983), pp. 1–28, 41–71, 85–91; Gaukroger (1995), pp. 293–4; Chapter 14.5–6 of this book.
84 Schongauer, *Studies of Peonies*, Getty Drawings Collection, 92.GC.80; Panofsky (1971), pp. 4–5, 15–17, 22–4; Arber (1986), pp. 20–2, 148–51, 192–3, 202–46; Gordon (1987), pp. 59–60, 84–9; Hutchinson (1990), pp. 27–39; Kaufman (1993), pp. 9–21, 45–8, 99, 171–3; Findlen (1994), pp. 65–70; Wilson (1995), pp. 75–6; Hendrix and Vignau-Frère (1997), pp. 9–11, 23, 63–81; Wilberg (1997), fols. 66–76; Daston and Park (1998), pp. 149–58, 191.
85 Agricola (1556), title-page; (1912), pp. 45, 49, 173, 177, 180, 185, 197: see also Freedberg (1989), pp. 5–6, 179, 181, 189, 195, 211, 300, 366–72, 385–8; Büttner (2003), in Lefèvre, Renn and Schoepflin (2003); and in the same collection, see especially the contributions by Dolza, Galuzzi, Lefèvre, McGee, Lüthy, and Ogilvie; the whole volume is invaluable for its pictures as well as the discussions. See also Saunders and O'Malley (1950); Ivins (1969); Shirley and Hoeniger (1985); Winkler and Van Helden (1993), pp. 97–116; Galluzzi (1996); Grafton (2000); Smith (2013).
86 Landucci (1969), p. 314; Niccoli (1990), pp. 30–60; Wilson (1995), p. 237; Daston and Park (1998), pp. 177–90.
87 Copenhaver (2012).
88 Copenhaver and Schmitt (1992), pp. 1–59, 196–290; Chapter 12.1 of this book.
89 Pagel (1958); Webster (1982a); Debus (1965), (1977), (1991); Grell (1998); Moran (2006);Principe (2013), pp. 27–36.
90 Della Porta (1658), p. 1; Calder (1952); Clubb (1965); Muraro (1978); Clulee (1988); Roberts and Wilson (1990); Torrini (1990); Harkness (1999); Chapter 14.1 of this book.
91 Van Deusen (1932); Abbagnano (1941); Kristeller (1964b), pp. 91–109; Peruzzi (1980), (1997); De Franco (1989); Nutton (1990); Grafton (1999); Siraisi (1997); Walker (2000), pp. 189–202.
92 Henry (1975); Purnell (1976), (2004); Headley (1990), (1997); Leinkauf (1990); Muccillo (1996), pp. 73–193; (2002); Deitz (1999); Walker (2000), pp. 203–36; Copenhaver and Schmitt (1992), pp. 317–28; Ernst (2010a), (2010b).
93 Yates (1964); Gatti (1999), (2011); Rowland (2008); Bassi (2014); Grafton (1991), pp. 145–77; Copenhaver (1992a), pp. xl–lii; Copenhaver and Schmitt (1992), pp. 303–17; Chapters 7–10 of this book; Ciliberto (2014) is a masterful compendium of the whole world of Bruno studies.
94 Copenhaver and Schmitt (1992), pp. 303–17.

95 Bruno (1991), p. 62, with Rita Sturlese's commentary, pp. liv–xxiii: my account of Bruno's mnemonics relies on Sturlese's brilliant analysis, based on careful philological reasoning, in her edition of *De umbris*, where she explains and conclusively justifies her disagreements with Yates (1964) and (1966); see also Torchia (1997).

96 Bruno (1991), pp. 151–6; Agrippa (1600), I, 263–8; Albumasar (1500), sigs. E3^{r}–6^{v}; *Picatrix* (1986); Lippincott (1987); Barton (1994), pp. 27–9, 119, 194–5; Warburg (1999b); (1999a), pp. 734–50; Duits (2011).

97 Bruno (1991), pp. 169–74.

98 Sturlese in Bruno (1991), pp. lvi–lix; Rowland (2008), pp. 123–4.

99 Bruno (1991), pp. 169, 174–5, with Sturlese's commentary, p. lxiv; her more detailed account also shows how Bruno's system handles syllables that do not end in a vowel.

100 Bruno (1991), pp. 135–6, 142, 144, 150, 162, with Sturlese's commentary, pp. lxiv–lxvii: although the *sequence* of the 36 decans is natural, the decan images themselves – unlike most zodiacal images – represent nothing seen in nature: people often see rams, fish, scorpions, and so on in nature, where no one has seen the glowering Taurus decan, as shown in figure 15 of his book, even though many bulls have been seen.

101 Bruno (1991), p. 174.

102 Sturlese in Bruno (1991), pp. lxxii–lxxiii; Polydore Vergil (2002).

103 Sturlese in Bruno (1991), pp. lxx–lxxiii; Ingegno (1998), pp. xv–xx; Rowland (2008), pp. 126–8.

104 Bruno (2000), pp. 518–20; Ingegno (1998), pp. xv–xx.

105 Ingegno (1998), pp. xv–xx.

106 Bruno (2000), pp. 436–8.

107 Bruno (2000), pp. 208–16, 252–6, 413–550; Hesse (1978).

108 Bruno (2000), pp. 180–2, 482: Aquinas, *SCG* 3.23; Litt (1963), pp. 99–109, explains that while Aquinas was sure that spiritual intelligences *move* the celestial spheres, he doubted – but did not deny – that the intelligences *animate* the spheres; also Sedley (1999), pp. 388–90.

109 Bruno (2000), pp. 222–4, 238, 274; Section 1 of this chapter.

110 Bruno (2000), pp. 240–2.

111 Bruno (2000), pp. 166–74; Section 2 of this chapter.

112 Bruno (2000), pp. 208–16, 252–6.

113 Bruno (2000), pp. 276–80; Lüthy (2003); Chapter 7.6 of this book.

114 Bruno (2000), pp. 168–70, 242; Agrippa (1600), I, 1–2; Section 2 of this chapter.

115 Bruno (2000), pp. 242–50, 418, 510.

116 Bruno (2000), pp. 458, 520; Hopkins (1954), p. 65: "That Nature is a Heraclitean Fire and of the Comfort of the Resurrection."

117 Shakespeare, *The Tempest*, 1.2.24; Kermode in Shakespeare (1964), pp. xi–xxiv.

118 Shakespeare, *A Midsummer Night's Dream*, 2.1.43; Scot (1973), pp. 104–5; Briggs (1959); Anglo (1977b); Holland in Shakespeare (1994), pp. 21–49; Johnstone (2006).

13. THE POWER OF MAGIC AND THE POVERTY OF ERUDITION

1 Bunyan (2003), p. 19.
2 Renan (1861), pp. 354–8; Chapter 12.1 of this book.
3 Naudé (1623); Rice (1939), pp. 52–62; Spink (1960), pp. 3–26; Arnold (1970), pp. 43, 56, 63–8, 73–89, 115–40, 189–91; Yates (1975), pp. 71–80, 91–8, 126–50, 279–80; Mandrou (1980), pp. 153–312; Walker (1981), pp. 1–42; Kahn (2001), pp. 283–94; (2007), pp. 470–82.
4 Naudé (1625); Vanini (1616); Le Loyer (1605); Charbonnel (1919), pp. 302–82; Busson (1933), pp. 316–35; Busson in Pomponazzi (1930), pp. 79–81.
5 Naudé (1625), p. 331; Pomponazzi (2011), pp. 68–9, 94–5, 151–4, 160; Pine (1986), pp. 252–63; Pintard (1943), pp. 163–4, 445–6, 451–4, 466–8.
6 Naudé, (1627), 54–6, 75, 80; see also Naudé (1950); (1701), pp. 6–7, 76–7, 99, 115–17; Pintard (1943), 158, 163–4, 168–72, 262; Haase (1959).
7 Naudé (1701), pp. 27, 95–6; Kristeller (1968), (1979); but see Pomponazzi (2011), pp. 48–9, with comment by Perrone Compagni, p. xxxiv, n. 69, explaining that Pomponazzi, like Peter of Abano, makes the Lazarus story an exception to the rule that God does not intervene in nature.
8 Shakespeare, *The Tempest*, 1.2.72-6, 89–91, 5.1.50-7; Arist. *Metaph*. 983^{b}29–34.
9 Gouhier (1958); Foucault (1966); Chapters 7, 14.1, 5–6 of this book.
10 Vanini (1615); Naudé (1623); Anon. (1623); Garasse (1623); Charbonnel (1919), pp. 302–83; Busson (1933), pp. 28–31, 479–80; Rice (1939), pp. 52–62; Pintard (1943), pp. 31, 62–3, 442–3; Spink (1960), pp. 5–47; Arnold (1970), pp. 43, 56, 63–8, 73–89, 115–40, 189–91; Yates (1975), pp. 71–80, 91–8, 126–50, 279–80; Ernst (2010a), pp. 232–41; Chapter 14.3–5 of this book.
11 Kahn (2001), pp. 235–49, 319, which is an English translation of Kahn (2007), pp. 413–99; for the statement by Locke, see Oxford, Bodleian, MS Locke c. 42, 70, in the transcription by William Newman in Kahn (2001), pp. 248–9; see also Kahn (2002): for the identification of Étienne Chaume, Kahn cites Secret (1971); he also notes, speaking of Yates (1975), that her "*Rosicrucian Enlightenment*… has scarcely done anything but add to the reigning confusion on the topic," referring for clarification to the abundant work of Carlos Gilly, e.g., Gilly (1995).
12 Naudé (1623), pp. 7, 38, 42, 48, 75, 94, 114; Kahn (2001), pp. 260–4, 276–80, 285–92.
13 Morin (1624), pp. 5–6; see also Morin (1661); De Clave (2000); Kahn (2002), pp. 143–72; (2007), pp. 500–62, esp. 500–14.
14 Kahn (2007), pp. 561–2; Schmaltz (2004), pp. 29–34.

15 Naudé (1623), sigs.aiiii^{v}, cii^{r}, p. 2; *OCD*, "Phlegon of Tralles," p. 1172.
16 *SHA, Firm. Sat. Proc. et Bon.* 7–8; "Paolo Crinito," in *CE*, I, 358–9; "Historia Augusta," in *OCD*, pp. 713–14; Grafton (1990), pp. 76–85;
17 Naudé (1623), p. 115; Pers. 5.120–1 (trans. N. Riudd); *OCD*, p. 1172.
18 Naudé (1623), pp. 5, 8–10; Arist. *Rhet.* 1371^{a}30–71^{b}5; Cic. *Orat.* 157; Hor. *Ep.* 1.19.19; Sen. *Ep.* 33.7; Iamb. *Vit. Pyth.*8; Synes. *Calv.* 10, cited from Vossius (2010), pp. 120–1.
19 Naudé (1623), pp. 8, 13–16; Pintard (1943), p. 437.
20 Naudé (1625), p. 331; (1701), pp. 6–7, 115–17; Rice (1939), pp. 10–14; Pintard (1943), Charbonnel (1919), pp. 280, 383–5; Busson (1933), pp. 165–9, 224–44, 361; Popkin (2003), pp. 80–98.
21 Naudé (1623), pp. 86, 88; Rice (1939), pp. 52–62; Pintard (1943), pp. 442–3.
22 Naudé (1625), sigs.aiii–vi, pp. 634–49; Busson (1933), p. 367; Rice (1939), pp. 63–71; Pintard (1943), pp. 445–57; Brann (1999), pp. 227–31.
23 Naudé (1625), sig. avi, pp. 24–45, 389–413.
24 Naudé (1625), *Apologie*, pp. 42–4; Pintard (1943), pp. 444–5, 463; Chapter 12.1 of this book and section 2 of this chapter.
25 Naudé (1627), pp. 35–8, 43–4; see also Naudé (1950); Rice (1939), p. 125; Blair (2011), pp. 57, 119–20, 129–31, 160–1.
26 Naudé (1627), pp. 47–50, 55, 63–4, 75; Olmi (1978); Blair (1997), pp. 90–5, 185; Siraisi (1997), pp. 12–13; Copenhaver and Schmitt (1992), pp. 187–92.
27 Naudé (1627), pp. 54–6.
28 Naudé (1650).
29 Naudé (1650), pp. 54–5, 667.
30 Naudé (1650), pp. 309–10; Blair (2011), p. 76.
31 Naudé (1650), pp. 310–12; Busson (1933), pp. 316–39, 363; Mandrou (1980), pp. 126–33, 138–43, 163–91; Walker (1981), pp. 33–42; Popkin (2003), pp. 80–87, 95–6.
32 Calvin (1863–1900), VI, 537–614; Ginzburg (1970); Eire (1985).
33 Naudé (1650), pp. 56, 186–9.
34 Naudé (1650), p. 313.
35 Naudé (1650), pp. 314–5, 469.
36 Naudé (1650), pp. 286–8, 314, 376; Ov. *Rem. am.* 290; M. Ant. 1.6; Popkin (2003), pp. 28–30, 81–2.
37 Naudé (1650), pp. 666–8; Rossi (1984), pp. 3–24; Freedberg (1989).
38 Trevor-Roper (1956), pp. 133, 181, having noted that Naudé admired "the Platonists, Hermetics, and Paracelsians" but did not believe in witches, adds that "no mere scepticism, no mere 'rationalism,' could have driven out the old cosmology."
39 Borges (1998), pp. 135–6.
40 Bacon (1857–74), VII, 316–19; Gaukroger (2001), pp. 64–5.
41 Coke (2003), I, 231–2; Martin (1992), pp. 95–6; Gaukroger (2001), pp. 59–63.
42 Bacon (1670), pp. 71–2; (1857–74), IV, 367; (1996), pp. 20–1.

43 Gaukroger (2001), pp. 7–12, 57, 105–6.
44 Bacon (1670), sig. A4r, pp. 1–28; (1996), p. 229; Klein (2012); Rees (1986), p. 418; Eamon (1994), pp. 288–90; Gaukroger (2001), pp. 32–3; Blair (2011), pp. 15, 72, 110.
45 Bacon (1670), pp. 24–5; Eamon (1994), pp. 283–90.
46 Bacon (1670), pp. 24–6
47 Bacon (1670), pp. 101–5.
48 Bacon (1670), pp. 24–6; Gaukroger (2001), pp. 105–7; Copenhaver (1987b), pp. 296–300.
49 Bacon (1857–74), II, 656–7, 660, IV, 347–54, 400–1; Rossi (1968), pp. 1–35; Rees (1975), pp. 81, 85–6; (1977), pp. 110–13; (1980), pp. 552–3; Walker (2000), pp. 199–202.
50 Bacon (1857–74), II, p. 86, IV, pp. 84, 401; Anderson (1948), pp. 107, 207.
51 Bacon (1857–74), I, 456–7, III, 289, IV, 245, 296, 349, 355, 366–7, 425, X, 90; Trevor-Roper (1956), pp. 167–8, 180–1; Thomas (1971), pp. 350–2, 661–3; Capp (1979), pp. 180–90; Clark (1984), p. 355; Gaukroger (2001), pp. 7, 17, 87, 196, citing Findlen (1997), p. 241.
52 Bacon (1857–74), IV, 119–22, 126–55, 245, 366–7, 398; Anderson (1948), pp. 207, 219.
53 Bacon (1857–74), II, 671–2, IV, 124–5, 233, 242–4, 366–7; Rees (1975), pp. 91, 97–8; Chapters 3.4 and 5.3, 5 of this book.
54 Bacon (1857–74), V, 235–67; (2000), pp. 188–9; Drake (1978), pp. 160–1, 273–4, 487; Rees (1984), pp. 310–11; Heilbron (2010), pp. 114–16, 216–17, 259–61, 296–7.
55 Bacon (2000), pp. 188–9, 162.
56 Bacon (2000), pp. 64, 86–7, 100.
57 Exod. 22:18; Bunyan (2003), pp. 55–61; Trevor-Roper (1956), pp. 140–5.

14. DISENCHANTMENT

1 AT, I, 351.
2 Della Porta (1658), pp. 1–3; Diog. Laert. l pr. 1–6; Chapter 12.1–2, 5 of this book.
3 Della Porta (1658), pp. 7–20; Chapters 12, 13.2 of this book.
4 Chapters 3–5, 11, 12.2 of this book.
5 Sections 9 and 10 of this chapter; see also Darnton (1970); Parinetto (1974).
6 Della Porta (1658), pp. 4–8; see Trevor-Roper (1956), pp. 177–81, for "the accepted philosophy of the natural world, of which witch-beliefs were an extension"; also Chapters 11.4.C–G, 12.4 of this book.
7 Paracelsus (1623), sig. evi; Roberti (1618), sig. aviii, pp. 221–64; Kahn (2001), pp. 276–83; (2002), pp. 168–9; Chapter 13.1 of this book.
8 Mersenne (1625), pp. 79–80; (1933–88), I, 154–5, 166–7, II, 590; Naudé (1625), p. 331; Lasswitz (1890), I, 339, 482–7; Metzger (1969), pp. 57–9, 121–6; Arnold

(1970), pp. 43, 56, 63–8, 73–89, 115–40, 189–91; Lenoble (1971), pp. 150–2, 208–11; Hannaway (1975), pp. 79–80, 92–3, 97; Yates (1975), pp. 71–80, 91–8, 126–50, 279–80, 286; Debus (1977), I, 159–68, 262–5; (1991), pp. 46–101; Webster (1982a), pp. 60–1; Redondi (1987), pp. 203–26, 272–86; Shea (1991), pp. 95–8; Chapters 6, 12.1, 5, 13.1 of this book.

9 Basso (1621), pp. 150, 245–69, 343–4; Mersenne (1624), I, 236–7; Lasswitz (1890), I, 333–9, 436–54, 455–81; Spink (1960), pp. 28–41; Gregory (1964), pp. 43–53, 56–62; (1966), pp. 44–60; Namer (1980); Pagel (1984), pp. 87–91; Weeks (1991), pp. 1–5, 35–78, 130–8, 209–19; Hegel (1995), III, 188; Newman (2006), pp. 85–153.

10 Fludd (1617–26); Campanella (1620); Burgersdijck (1622); Mersenne (1623); Gassendi (1624); Busson (1933), pp. 28–31; Pintard (1943), pp. 31, 62–3; Spink (1960), pp. 5–12; Chapter 13.1 of this book.

11 Burgersdijck (1631), pp. 8–9, 16, 32–3, 51; (1632), sig. K4^{v}; (1640), pp. 161–2; Coimbra Commentators (1603), pp. 210–14; (1606), p. 378; 1609a, pp. 276, 382, 412; (1609b), pp. 311–17; AT,V, 125; Dibon (1954), pp. 90–6, 100, 113–16, 123–5; Ruestow (1973), pp. 4, 12–17, 21–2.

12 Suárez (1856–78), XIII, 558, XXV, 665; Eustachius (1648), pp. 170, 184, 215; Chapter 12.1 of this book.

13 Coimbra Commentators (1609a), p. 225; Aristotle *Phys.* 190^{a}13–91^{a}22, 193^{a}10–93^{b}21; *Gen. et corr.* 335^{a}24–36^{a}13; *De an.* 412^{a}1–13^{a}10; *Metaph.* 1029^{b}12–30^{b}13, 1069^{b}31–4; Gal. *Loc. aff.* 5.6; *Meth.med.* 13.6; *Simpl. med.* 4.9; 5.1, 7, 18; 6.1; 10.2.1, 21; 11.12.23, 13.48; 12.1.34; *Comp. med. s. loc.* 8.8; *Comp. med. p. gen.* 1.16; [*Aff. ren.*]; Röhr (1923), pp. 96–9, 107–12; Chapter 6.2 of this book.

14 See especially Röhr (1923); also Hutchison (1982) and (1991), who has stimulated other inquiries, such as Millen (1985), and has also influenced discussions of related topics, such as Schaffer (1985); Henry (1986b); Clarke (1989); Wilson (1990). See also Bianchi (1982); Hutchison (1983); Richardson (1985); Wear (1985). In Hutchison (1982) and the subsequent literature, a key claim is that unintelligibility is an essential feature of occultness, which is not my view: see Chapter 6.2, 12.1 of this book and sections 6 and 10 of this chapter.

15 Aquinas, *De ver.*, 2.3.19; Pagel (1982); Newman (2003), pp. 110–14, 141–51; Newman and Principe (2005), pp. 56–91; Moran (2006), pp. 89–98.

16 Geber (1991), pp. 490, 516–18; Clericuzio (2000), pp. 9–33; Newman (2003), pp. 93–103, 110–14, 141–51, 160–1, 168–9; Chapter 3 of this book and Section 9 of this chapter.

17 Burgersdijck (1631), pp. 9, 51; Coimbra Commentators (1603), p. 213; (1606) p. 378; (1609b), p. 314.

18 Campanella (1635), pp. 231–6, 240–2; Firpo (1940), pp. 107–9; Hansen (1985), pp. 50, 136; Headley (1997); Ernst (2010a), pp. 188–95, 206–7, 215; Chapters 7.5, 12.5 of this book.

19 Campanella (1638a), pp. 133–45 (1.2.4.5-7); (1974), pp. xxx–xxxiii, 64–78, 112–19, 134–8, 146–52, 246, 310–11, 422, 446; Blanchet (1920b), pp. 167–76,

270; Firpo (1940), pp. 31–2; Di Napoli (1947), pp. 109–113, 332, 337–40; Corsano (1961), p. 169; Femiano (1968), pp. 104–7, 111–22, 307, 315–18; Franco (1969), pp. 115–26; Copenhaver and Schmitt (1992), pp. 309–28; Ernst (2010a), pp. 7–14.

20 Campanella (1638a), p. 141 (1.2.4.5); (1925), pp. 19–21; (1939), pp. 58, 185–95, 200–13; (1974), pp. xxx–xxxi, xliii, 223–9, 447; Blanchet (1920b), pp. 142–4, 310–13; Firpo (1940), pp. 119–22; Di Napoli (1947), pp. 115, 235–43; Corsano (1961), pp. 32–3; (1965), pp. 316–17; Franco (1969), pp. 122–34; Femiano (1969), p.157; Ernst (2010a), pp. 200–10.

21 Campanella (1617), pp. 28–32; (1925), pp. xxxi–15, 19–21, 131–3, 146–51; (1939), pp. 185–7; Firpo (1940), pp. 27, 67–70; Di Napoli (1947), pp. 237, 356; Corsano (1961), pp. 85–7; Badaloni (1965), pp. 46, 62–8; Femiano (1968), p. 411; Milano (1969), pp. 164–5; Ernst (2010a), pp. 114–27.

22 Campanella (1638a), pp. 138–41, 176–7 (1.2.4.5, 2.9.1); (1925), pp. xxxi, 9, 131–3, 221, 254; (1939), pp. 244, 250; (1974), pp. 228, 334; Ernst (2010a), pp. 48–9, 206–7.

23 Campanella (1638a), pp. 155–6, 197 (1.2.5.4, 7); (1925), pp. 20, 131–2; Amerio (1972), pp. 160–1.

24 Campanella (1635), pp. 240–2; (1638a), pp. 143, 150–1, 189–93 (1.2.4.7, 12–13; 3.15.8–9.5); (1925), pp. 23–7, 68, 212, 218–19, 230, 250–3, 284–5, 323, 329; (1957), pp. 166–74, 192–4; Ernst (2010a), pp. 172–80, 191–2, 220–6.

25 Craven (1902), pp. 16–49, 78; Cafiero (1964–5), I, 394–5; Ammann (1967), p. 198; Hannaway (1975), pp. 92–116; Debus (1977), I, pp. 205–24; Godwin (1979), pp. 5–8, 14, 93–4; Huffman (1988), pp. 10–18; Janacek (2011), pp. 43–74.

26 Fludd (1659), pp. 171–83; Cafiero (1964–5), I, 372–8, 382, 398; Yates (1964), pp. 403–7; Debus (1977), I, 117–26, 225–40, 291; Godwin (1979), pp. 13–15, 20–8, 31, 76; Scholem (1974), pp. 120, 187, 200–1, 240, 395, 416–19; Newman (2004) studies the nature/art opposition in Bacon, Biringuccio, Boyle, Erastus, Leonardo, Palissy, Paracelsus, Sennert, Varchi, and other early modern figures but also in ancient and medieval thinkers.

27 Fludd (1629), pp. 75–7; (1633); Cafiero (1964–65), I, 378–86, 395–8, 408–9, II, 6–9, citing Fludd (1621) p. 5; Mersenne (1933–88), II, 132–41, 448-35, 584, IV, 350; Gassendi (1658), III, 211–68; Ammann (1967), pp. 204, 210–12; Debus (1977), I, 239, 253–60, 265–76; (1987), pp. 109–43, 374–93; Godwin (1979), pp. 12, 17–18, 42–9, 54–5, 69, 93; Westman (1984), pp. 177–207; Bianchi (1987), pp. 87–123; Brundell 1987, pp. 110–12; Huffman (1988), pp. 50–69, 100–105.

28 Mersenne (1623), cols. 130, 285–8, 489, 739–40, 937–46, 1164, 1743–4, 1750.

29 Mersenne (1623), cols. 285–8, 489; (1933–88), I, 42, 148–9; Charbonnel (1919), pp. 302–83; Busson (1933), pp. 28–31, 479–80; Lenoble (1971), pp. 67–76; Spink (1960), pp. 5–47; Whitmore (1972), pp. xiv–xix, xxvi–xxxiii, 8–11; Mandrou (1980), pp. 121–52; Walker (1981), pp. 1–17; Shea (1991), pp. 124–5.

30 Mersenne (1624), I, 211, 220–1, 229–38, II, 292–9, 326–42, 360–2; (1625), p. 109; Yates (1964), pp. 348–59; Chapter 12.1, 5 and 13.1 of this book.

31 Mersenne (1623), cols. 539–74; Mersenne (1624), I, 212, 220–1, 225–32, II, 369, 372, 377–8, 450–5; (1625), pp. 27–8, 108–113, 125–6; (1933–88), I, 147; Busson (1933), pp. 339–41; Lenoble (1971), pp. 9–10, 109–12, 150–2, 157–8, 166, 200–201, 208–17, 222, 373–6; Popkin (2003), pp. 113–14; cf. Dear (1988), p. 42.

32 Mersenne (1623), cols. 541, 548–54, 1359–63, 1437–52, 1493–6, 1807; (1634), pp. 109–11; (1636–7), II, 26; (1933–88), IV, 227, 240; Lenoble (1971), pp. 38–9, 49–51, 83–4, 119–20, 133, 336–52, 370–8; Dear (1988), p. 4.

33 Mersenne (1624), II, 373–4; (1634), pp. aii–iiii, 11; Scaliger (1557), fol. 455^{v} (344.8); Lenoble (1971), pp. 48, 218–21, 252–3, 310–25, 352–6, 385–8, 390–1, 415, 420, 438; Hansen (1985), pp. 50, 136; Dear (1988), pp. 3–4, 7, 15–22, 27–42, 77–8, 171, 179–85, 200, 210–22, 225–6; Popkin (2003), pp. 112–20; Maclean (2007), p. 251; Chapter 7.5 of this book.

34 Mersenne (1634), pp. 5, 88, 91; (1933–88), IV, 253, 258, 328, V, 204, VI, 40–1, 2I7; Lenoble (1971), pp. 92–5, 336–7, 370–1.

35 Mersenne (1933–88), III, 394, VI, 47, 68; Montaigne (1967), p. 413; Lenoble (1971), pp. 67–72; Chapter 7. 7 of this book.

36 Mersenne (1933–88), II, 497–8, 514, 520–1, 530–40, III, 13, 39, 54, 62–5, 78–9, 82, 98, 111, 117, 143, 153, 180–4, 462–3, IV, 53, 125, 190–8, 371–4, V, 83–8, 120–3, 189–91, 196, 232, 541–6, 560, VI, 137–9; Lenoble (1971), pp. 4, 12, 16–23, 72–6, 80–1, 310–13, 447; Mandrou (1980), pp. 257–9; Pagel (1982), p. 13; Ross (1985), pp. 106–7; Dear (1988), pp. 7, 15–22, 28–42,45–6, 53–5, 107, 224; Debus (1991), pp. 71–4, 106–11.

37 Rochot (1944), pp. vii, 3–9, 44–5; Gregory (1961), pp. 48–52; Bloch (1971), pp. xxvi–xxx, 31–2, 75, 148, 155–6, 160; Jones (1981), pp. 11–95, 281; Brundell (1987), pp. 15–19, 21–3, 27.

38 Gassendi (1658), I, 372, 449–57, II, 456, 463, III, 99, 203, 205, 653; (1959), pp. 489–91, 494–5; (1972), p. 199; Rochot (1944), pp. 107–8, I43-4, I98; Gregory (1961), pp. 52, 152–9, 190, 228–9; Bloch (1971), pp. 164–715, 243; Jones (1981), pp. 107–9, 135–7; Brundell (1987), pp. 19, 99–101, 122–5, 133–4; Popkin (2003), pp. 120–4; Chapter 7.1 of this book.

39 Gassendi (1658), I, 449–50, 454–5; Bloch (1971), p. 210; Chapter 7.2–7 12.2 of this book.

40 Gassendi (1658), I, 14–17; Gregory (1961), pp. 61–3, 230; Schmitt (1965); Walker (1972), pp. 1–21; Jones (1981), pp. 282–6; Brundell (1987), pp. 108–10, 113, 117–28, 134–5.

41 Gassendi (1658), III, 213, 246, 659–60; Mersenne (1933–88), II, 149, 181–201; Gregory (1961), pp. 53–63, 158, 189–91; Cafiero (1964–5), I, 385–6, II, 6–9; Bloch (1971), pp. 157, 205; Jones (1981), pp. 286–9; Brundell (1987), pp. 71, 110–13.

42 Gassendi (1658), I, 273; Rochot (1944), p. 185; Schmitt (1965); Bloch (1971), pp. 162–3, 205–13, 228–32, 447–57; Jones (1981), pp. 292–3; Brundell (1987), pp. 26–7, 50–9, 71, 82, 100–1, 104–7, 137–43; Popkin (2003), pp. 91–4, 120–22.

43 Gassendi (1658), II, 114, 132; De Clave (1635); Bloch (1971), pp. 233–69, 371–6, 447–57; Brundell (1987), pp. 126–33; Hirai (2011); see also De Clave (2000), with Clericuzio (2000), pp. 43–7.

44 Gassendi (1658), III, 633, VI, 450; Rochot (1944), pp. 118–19; Metzger (1969), pp. 286–7, 432–3, 449–68; Brundell (1987), pp. 101, 132–4; Wilson (1990), (1995).

45 AT, II, 380, VI, 9, 11, 22, X, 204; Galileo (1996), I, 770–83; Drake (1981), pp. 387–93; Cohen (1985), pp. 117–19; Chapters 2 and 13 of this book.

46 AT, I, 25, 31, II, 436, 659–60, III, 522, IV, 718, V, 547; Gaffarel (1629); Gouhier (1962), pp. 63–6; Gilson (1967), pp. 259–68; Ross (1985), pp. 100–1; Stolzenberg (2013), pp. 3–4, 15–18.

47 AT, II, 629, VI, 11, 17, X, 63–5, 156–7, 164–9, 173–88, 193–200, 214, 216, 218; Baillet (1946), pp. 36–41, 50–1; Gouhier (1958), pp. 26–8, 38–55, 110–11, 115–16, 134–41, 151; Arnold (1960); (1970), pp. 139–63; Shea (1991), pp. 44–5, 93–120; cf. Cole (1992), pp. 214–16; Gaukroger (1995), pp. 15–20, 384–405; Kahn (2001), pp. 295–300; (2007), pp. 482–8.

48 AT, I, 21, 153, 351, II, 284–5, 351–2, 498, 573, III, 8, 15, 20, 42, 49–50, 85, 120–2, 124, l30-1, 146, 163, 177, 598–9, 669, 673, IV, 72–3, 189–91, 218–19, 529–30, 579–80, V, 65–6, 338, VI, 3–11, VIII-2, 353, IX-B, 392, X, 90, 504, XI 518, 606; Marlowe, *Doctor Faustus*, 1.1.1–60 (B Text); Scott (1952), pp. 167–74; Ross (1985), p. 97; Gaukroger (1995), pp. 59, 129, 191.

49 AT, IV, 569–70, V, 327, X, 360, 379–80, 398–403, 426, 433–5, 439, 442–3.

50 AT, II, 557–8, III, 214.

51 AT, II, 73–4, 363–8, III, 211–12, 367, 371–2, 420–1, 460–4, 487–517, VI, 239, 249; Gaukroger (1995), pp. 352–61

52 AT, III, 523–4, 528, *535,* 558–9, 598–9, IV, 77–8, 85–9, V, 125–8, VII, 586, 596, VIII-B, 15–16, 22–33, I42, 150–2, 174, 179; Descartes (1959); Dibon (1954), pp 194–219; Lindeboom (1979), pp. 22–7; Ruestow (1973), pp. 34–65; Ross (1985), p. 103; Shea (1991), pp. 333–8. Roman Catholic teaching on the eucharist provoked Protestant charges of magic, intensifying the debate about qualities and substantial forms; see Bohatec (1912); Balz (1951); Rosenfield (1968); Thomas (1971), pp. 29–36, 46–57, 273–5; Armogathe (1977); Gouhier (1978); Watson (1982); Redondi (1987), pp. 203–26, 272–86; Clarke (1989); Adams (2010); Chapter 12.1 of this book.

53 AT, VIII-B151–2; cf. I, 21; Aquinas, *SCG* 3.105; Mersenne (1623), col. 1151; (1933–88), II, 443–5; Hobbes (1839–45), III, 671; Chapter 11 of this book.

54 AT, I, 323–4, II, 199–200, 222–4, 363–8, 544, 635, III, 19, 211–12, 420–1, 424–5, 430–1, 493, 503, 505, 508, 545, 648–9, 667–8, IV, 700, V, 222–3, 291–2, VI, 85, 113–14, 130, 135, VII, 247–54, 433–7, 587, VIII-A, 322–5; Gilson (1967), p. 23, for the "*limite mystérieuse*"; also pp. 18–27, 143–53, 158–9, 163–73, 189,

247–8; Gouhier (1978), pp. 153–6; Schaffer (1985), pp. 126–7; Garber (1992), pp. 94–116.

55 AT, VII, 440–3; Gilson (1967), pp. 168–74,247–8; Gouhier (1962), p.362; section 10 of this chapter.

56 AT, I 109, 228, 351, II, 440, III, 648–9, V, 291–2, VI, 113–14,130, VII 440–3, VIII-A,24–31,314–15, 318, 322–3,VIII-B, 348–9, 366, IX-B, 308–9, XI 25–36; Chapter 13.2 of this book.

57 Molière, "Le Malade imaginaire," 1.1, 2.5, in Molière (1962), pp. 628, 642–3; Chapter 12.4 of this book.

58 Hutchison (1982), (1991), 245–78; Daston and Park (1998), pp. 260–5, 280–93, 298–9, 314; Sections 2 and 10 of this chapter.

59 AT, VIII, 283–315; Arist. *De an.* 435^{a}11–^{b}25; cf. *Sens.* 436^{b}13–37^{a}31; *Metaph.* 980^{a}23–7; Fernel (1550), pp. 10–13; Scott (1952), pp. 71–81; Lindberg and Steneck (1972); Shea (1991), pp. 129–47, 205–18, 228–49.

60 Chapter 12 of this book.

61 Digby (1644a), p. 275; (1644b), pp. 11, 14–16, 31–2, 36–7, 46–8; Petersson (1956), pp. 86, 98, 107–9, 115, 120–8, 165–75; Peters (1967), pp. 21–8; Thomas (1971), pp. 518–19, 523; Redwood (1976), pp. 134–5; Schaffer (1985), pp. 118–19.

62 Digby (1644a), pp. 2–4,7,35–8,81,138–9,163–5; Petersson (1956), pp. 181–93.

63 Digby (1644a), pp. 164–5,184, 332; (1658a); (1658b), pp. 1–16, 19–34,65, 146–7,151; Petersson (1956), pp. 262–74,326; Dobbs (1971–4); Janacek (2011), pp. 99–127.

64 Digby (1644a), pp. 182–5; Hobbes (1839–45), I, 65–6, III, 664; *De corpore*, 1.6.5–6; 2.9.7; 4.25.1–2, 26.7; 30.15; Leviathan 1, 46; Brandt (1928), pp. 14–17, 30–1, 42–4, 62–9, 100–105, 294–7; Petersson (1956), p. 108; Foucault (1966), pp. 33–4; Peters (1967), pp. 15–18, 22–6, 45–51, 75–7, 83–9; Bernstein (1980); Shapin and Shaffer (1985), pp. 110–54; Sorell (1986), pp. 4–7, 51–2, 59–60, 69–77; Martinich (1999); Leijenhorst (2002), pp. 12–13, 84–9; Chapters 12.5 and 13.2 of this book; Sections 8 and 9 of this chapter.

65 Hobbes, *De corpore,* 1.3.4; *Leviathan*, 46; Peters (1967), pp. l20-8. Spragens (1973), pp. 86–7; Martinich (1992), pp. 237–9, 322–4,328–9; Leijenhorst (2002), pp. 38–50, 169–70; cf. Sorell (1986), pp. 37–41.

66 Hobbes, *Leviathan,* 5, 12, 34, 37, 45; Peters (1967), pp. 88–9, 233–9; Martinich (1992), pp. 237,247–55; Chapter 12.1 of this book.

67 Hobbes, *Leviathan* 2, 6, 12, 45; Peters (1967), pp. 225–33; Thomas (1971), pp. 145, 518–19, 523, 590; Martinich (1992), pp. 19–67, 333–7, describes Hobbes as a broadly orthodox Calvinist whose novelties in natural philosophy, theology, and biblical interpretation made it possible for Arminian and Aristotelian enemies to depict him as an atheist and an anarchist; Leijenhorst (2002), pp. 18–27, 97–100, sees him as rejecting "all scholastic metaphysics, … Protestant or Roman Catholic" and thus any natural theology, while taking the Italian naturalists seriously.

68 More (1672b), pp. 1–5, 29–36; Vaughan (1984), pp. 47–9, 235, 363; Cudworth (1678), pp. 700–15; Hoyles (1971), pp. 3–7, 13–17, 93; Burnham (1974), pp. 39–49; Cristofolini (1974), pp. 31–2, 51–2; Redwood (1976), pp. 50, 272; Brann (1979–80), pp. 105–12; Heyd (1981), pp. 259, 264, 272–4; Popkin (1986), pp. 21–7; section 9 of this chapter.

69 More (1672c), (1672d).

70 Richard Ward, who published More's biography in 1710, cites this passage from the *Second Lash* to show that More's "transported Admiration of Des-Cartes" was always constrained by his theology: Ward (1911), pp. 102–4. See also Cassirer (1953), p. 43; Cope (1956), p. 92; Lichtenstein (1962), pp. 49–53; Hoyles (1971), pp. 5, 14–15, 19–20, 38–40; Gabbey (1982), pp. 175, 187, 190–205, 214, 219–23, 238, 242; Funkenstein (1986), pp. 77–80.

71 More (1672e), p. vi, 36–7, 125, 158–61, 212; Cassirer (1953), pp. 139–45; Boylan (1980), p. 395; Gabbey (1982), pp. 234–6; Walker (1986), pp. 35–45, 59–73.

72 More (1672c), pp. 43–4; (1672e), pp. xi–xii, 103, 132, 212–15, 219–20; Plot. *Enn.* 4.4.40.5–9, 44.29–30; Boylan (1980), p. 397; Section 7 of this chapter.

73 More (1672c), pp. 86–142, 217–26, esp. 86–8, 94–5, 100; (1672e), pp. xi–xiii, 36–7, 137–41,166–7; Cassirer (1953), pp. 129–30; Hoyles (1971), pp. 26–7; Brann (1979–80), pp. 113–14,121–2; Gabbey (1982), pp. 202–3; Schaffer (1985), pp. 121–5; Chapter 13.1 of this book.

74 More (1672c), pp. 110–11, 135–6; (1672e), pp. 47–9; Thomas (1971), pp. 587–606; Curry (1989), pp. 49–5.

75 Glanvill (1661), (1662), (1667), (1668).

76 Cudworth(1678), p. 835; Casaubon (1669), p. 21; Cope (1956), pp. 2–6,9–31, 38, 56–65, 92–102, 129–40; Spiller (1980), pp. 7–9, 16–23, 38, 97, 105–19; Webster (1982a), pp. 92–100; Clark (1984); Clulee (1988), pp. 203–30: a "Behemist" is a follower of Jacob Boehme, whose influence was strong in England at mid-century; see Section 1 of this chapter.

77 Glanvill (1681); Hunter (2005).

78 Glanvill (1668), pp. 110–28; (1970), pp. 6–7, 11–14, 114–16, 150–6, 169–72; Cope (1956), pp. 11–15, 19, 38, 56–65, 92–102; Webster (1982), pp. 93–7; Chapter 12.4 of this book.

79 Glanvill (1970), pp. 178–81, 195–212; Cudworth (1678), pp. 160–5; Gysi (1962), pp. 21–3; Henry (1986b), p. 359; Walker (1986), pp. 47–57.

80 Glanvill (1668),pp. 10–12, 57, 100–102; Boyle (1964), pp. 104–5; (1772), III, 68–71, 134, 517, 529, 539–44, 560, 659–62, 669, 678, 688, 701–2; More (1944), pp. 279–83; Boas Hall (1958), pp. 102–7; (1965), pp. 79–80, 251; (1981), p. 489; Maddison (1969), pp. 192–3; Schaffer (1985), pp. 132–3; Alexander (1985), p. 64.

81 Glanvill (1681), pp. 89–94; Maddison (1969), pp. 123–7; Thomas (1971), pp. 198–211; Steneck (1982), pp. 173–5; Walker (1984b), pp. 343–4, 350–4; (1986), pp. 75–98; Bloch (1989), pp. 203–23.

82 Boyle (1998b); Principe (1998), pp. 190–1, 194–201.

83 Boyle (1998b), pp. 311–13; Principe (1998), pp. 191–3, 201–8.

84 Boas Hall (1965), pp. 67–70; More (1944), pp. 225–30; Maddison (1969), pp. 166–76; Dobbs (1975), p. 68; Capp (1979), pp. 180–9; Redwood, (1976), p. 103; Curry (1989), pp. 57–64; Malcolm (2004), p. 294; cf. Principe (2004b), who is less certain about Pierre's duplicity; Newman and Principe (2005), pp. 31–4, 63–4, 90–1, 154–5, 205–6, 268–72, 309–14; Newman (2006), pp. 160, 217–225. For Starkey, see Newman (2003).

85 Principe (1998), pp. 36–7, 58–62, 77–82, 86–9; see also De Clave (1635), (2000).

86 Boyle (1998a), esp. p. 266; Principe (1998), pp. 63–5, 78–9, 93–106.

87 Principe (1998), pp. 148–9, 153–5, 165–6, 174–80.

88 Boyle (1772), III, 1–2, 4–25, 27–9, 32, 35, 38–9, 46–7, 69–71, 113–18, 121, 128–31, 136, 278; (1964), pp. 104–5, 177–9, 182; (1979), pp. xxxi, 14–33, 120, 129, 134, 139–40, 144–5; More (1944), pp. 214–23, 231–5, 244, 250–3, 263–4, 280; Boas Hall (1958), pp. 95–7, 102–3; (1965), pp. 11–13, 17–28, 38, 46, 53, 59–74, 111–13, 178, 233–4; (1981), pp. 435–40, 460–4, 483; Maddison (1969), pp. 103, 119–20, 190–2; Webster (1975), pp. 57–67; Dobbs (1975), pp. 62–80, 198–204; Pagel (1984), pp. 148–55; Alexander (1985), pp. 18, 39, 48, 55–9, 61–84; Principe (1998), pp. 30–5; Newman and Principe (2005), pp. 311–13.

89 Boyle (1772), III, 4, 11, 13, 18–25, 46–7; Alexander (1985), pp. 5–9, 18, 39, 61–3, 85; Chapter 12.4 of this book and section 6 of this chapter.

90 Boyle (1964), pp. 178–83; Alexander (1985), pp. 37–40, 50–2.

91 Locke, *Essay*, 2.8.2, 7–10, 15, 17, 22–3, 26; Yolton (1970), pp. 20–5; (1985), pp. 112–14; Curley (1972); Alexander (1985), pp. 5–9, 87–8, 115–22, 131–4, 139, 150–67; Wilson (1991), pp. 196–214; McCann (1994); Kochiras (2009).

92 Chapter 12.4 of this book; section 6 of this chapter.

93 Agrippa (1600), I, 12–13, 32–3, 153–4; cf. II, 60–1; Galileo (1996), I, 672, 770–83; AT, VI, 93, 196–211; Locke, *Essay*, 2.13.19, 2.23.2; Emerton (1984), pp. 42–3, 129–35, 148–53, 248; Jones (1989), pp. 142–65; Wilson (1995), pp. 57–79, 85–8, 216, 238–43; Daston and Park (1998), pp. 300, 323; Freedberg (2002), pp. 7, 33, 41, 71, 101–8, 114, 142, 151–4, 160–3, 219, 222–32, 276; Chapter 12.4 of this book; section 6 of this chapter.

94 Hooke (1665), sig, aii, pp. 125–6, 185–6: note the different, though not entirely contrary point made by Wilson (1995), pp. 57–63, that "the microscope takes away the privilege of surface. What the object looks like on the outside is no guide to what it is.... And in the interior of things there is no resemblance ... even if we must call in the language of every day – of ropes, fibers, globules, forests, looms and children's toys – to describe it."

95 Wilson (1995), pp. 113–37; Section 10 of this chapter.

96 Dewhurst (1963), pp. 3–4, 21–3, 26–8, 33–9, 44; Yolton (1970), pp. 4–6, 35, 42; Duchesneau (1973), pp. 2–10, 32–41, 46–53, 93–6.

97 Dewhurst (1963), pp. 4–10, 19, 31, 48–9, 88, 128–9, 159, 170, 188–9, 208, 241, 250–1, 262–4, 272–6, 279, 283–5; Principe (1998), pp. 11–12, 174–9.

98 Locke, *Essay*, 2.23.8–9, 4.3.25; Yost (1990), pp. 261–2, 267; Alexander (1985), pp. 150–1, 162, 168–74.

99 Locke, *Essay*, 2.8.11–13, 23.11–12, 31.6; 3.6.9; 4.3.25–6; Locke (1976–92), II, 785; Locke (1963), IV, 467–8; Yolton (1970), pp. 11, 21–2, 45–7, 51–2, 64–5; Duchesneau (1973), pp. 83–7; Alexander (1985), pp. 124–5, 164; Rogers (1990), pp. 374–5; Wilson (1990), pp. 95–104; Yost (1990), pp. 260–70; cf. Jolley (1984), pp. 54–73.

100 Newton (1959–77), IV, 266–7, V, 392; (1972), I, 15; Koyré (1968), pp. 13–14, 56–9, 118, 139–42; Hesse (1978), pp. 122–5; Boas Hall (1978), p. 97; Westfall (1980), pp. 462–4, 472, 508, 645, 730, 744, 793; Hall (1980), pp. 149, 151, 157, 164.

101 Newton (1959–77), III, 240, 244, 249, 253–4, 286–7, V, 115–16; (1972), II, 555; Pascal (1904–14), I, 177–8, 184; Huygens (1888–1950), XIX, 628–30; Roberval (1644), pp. 1–3, 7, 16; Koyré (1968), pp. 59–60, 139; McMullin (1978a), pp. 58, 79; Hall (1980), pp. 145, 149, 161–3; Westfall (1980), pp. 464–5, 472, 505, 508, 730; Westfall (1984), p. 325; Henry (1994), pp. 126–31.

102 Newton (1952), pp. 347–54, 364–5; (1959–77), I, 175–6, 360–9, II, 290, 295, 439, 447, V, 299–300, 363–7; (1962), p. 208; (1972), II, 764; (1983), pp. 275–85, 363–5; McGuire (1967), pp. 84–5; (1968), pp. 155, 175–81, 185–7; (1977), pp. 109–11; Hawes (1968), pp. 121–30; Snow (1975), pp. 147–50, 157–8; Dobbs (1975), pp. 204–10; (1982), pp. 525–6; (1988), p. 55; Boas Hall (1978), p. 97; Westfall (1980), pp. 91, 94, 306–8, 372, 377, 390, 641–4, 747–8, 793–4; Walker (1984a), pp. 243–4.

103 Newton (1959–77), II, 415, III, 240, V, 300, 397; (1952), pp. 369–70, 403–5; (1962), pp. 109, 142–3, 213, 216, 223, 359, 363; (1972), II, 759–65; Pope (1963), p. 808; McGuire and Rattansi (1966), pp. 109, 112, 118, 124, 134–5; McGuire (1968), pp. 154, 161–4, 184–5, 193, 196; (1977), pp. 95–105, 128–9; Dobbs (1975), pp. 102–8; (1982), pp. 516–18, 526–8; (1988), pp. 59–74; McMullin (1978a), pp. 29–30, 54; Copenhaver (1980), pp. 540–8; Westfall (1980), pp. 55–6, 89, 97, 301–4, 318–21, 348–51, 415, 441, 505, 509–11, 647–8, 748–9; (1984), p. 331; Henry (1986b), pp. 336–8, 351–5.

104 Newton (1952), pp. 369, 376, 394, 401–2; (1959–77), II, 288, IV, 299, V, 63–5; (1962), 106–11, 140–5, 304, 307, 322, 327–8, 331, 334, 340–1, 345, 350, 353, 356, 360–1; (1972), I, 15–16, II, 764–65; Koyré (1968a), pp. 56, 146; McGuire (1968), pp. 194–7, 206; Parkinson (1969), pp. 93–4; McMullin (1978a), p. 57, 65–9; Hall (1980), p. 230; Westfall (1980), pp. 390, 422, 462–5, 505, 645–6, 730–1, 748–9, 773, 779; (1984), p. 324; Henry (1986b), pp. 339–40, 358; Sections 1 and 2 of this chapter

105 Newton (1952), pp. 339, 369–71, 376, 388–9, 394, 397–401; (1959–77), III, 249, 253–4, V, 363, 366, VI, 116–17; (1962), pp. 89–90, 109, 142–3, 217, 223, 303–4, 306–7, 321, 327–8, 331–3, 341, 345–51, 353–4, 356, 360; (1972), I, 19–20, II, 550–4, 759–65; McGuire (1970), pp. 5, 11–13, 29, 37–40; Snow (1975), pp. 166–7; McMullin (1978a), pp. 20, 50–1, 58–9, 102–3; Westfall (1980),

pp. 301–3, 372–3, 377, 381, 388–90, 407, 415, 420, 454, 462, 469, 505–6, 521–2, 641–3, 647, 779; (1984), p. 324; Dobbs (1988), p. 55.

106 Newton (1959–77), II, 2, III, 193, 195, 215–19, 249, 253–4, VII, 393; Keynes (1947); Dobbs (1975), pp. 6–20, 49–53, 66–8, 89–90, 121–60, 175–82, 191–5, 199, 210–13; (1991); Boas Hall (1975); Figala (1977), (1984); McGuire (1977), pp. 124–5; Whiteside (1977); Westfall (1980), pp. 281–6, 289–95, 299–301, 309, 357–61, 365–9, 407, 488–93, 524–33, 537–40; (1984), pp. 315, 318–21, 325–6, 330; Cohen (1980), p. 10; Gjertsen (1986), p. 13; Newman (1987); Henry (1988), p. 143; Lennon (1993), pp. 149–63, 279; Figala and Petzold (1993); Section 9 of this chapter.

107 Newman (2003), pp. 229–30.

108 Newton (1959–77), I, 368, III, 205, 209; (1962), pp. 223, 328, 341; (1972), II, 760; Dobbs (1975), pp. 146–55, 160–3, 230, 249–50; (1982), pp. 515–16, 521–4; (1988), pp. 58–9; McMullin (1978a), pp. 43–7, 75–8; Westfall (1980), pp. 293–6, 299–300, 303–7, 363, 366, 375, 389, 509, 527–30, 645; (1984), pp. 319, 322–3, 326, 328–31; Newman (2003), pp. 228–39.

109 Newton 1959–77, II, 2, 292; (1962), pp. 321–47; (1983), pp. 359–67, 376–7, 396–7; Bachelard (1967), pp. 97–102; Dobbs (1975), p. 186; Westfall (1980), pp. 307, 373, 389, 502, 530; Chapter 13.2 of this book and Sections 8–9 of this chapter.

110 Newton (1952), pp. 386–7; (1959–77), II, 292; Birch (1741), p. 242; Newman (2003), pp. 230–4 and Figure 7.

111 Newton (1959–77), III, 286–7, V, 115–16, 299, 393, 397, VI, 252–3, 285, 460, VII, 161–4; (1962), pp. 303, 305, 327, 341, 350, 353, 356, 360; (1934), I, xxvi–xxvii; Leibniz, *Nouv. ess.*, pref., 2.7.6–13, 21.47; 4.3.6; *Théod.*, disc. prelim. 19; (1969), pp. 82, 88, 124, 230–1, 249, 441, 494–5, 623, 663, 657, 716–17; Leibniz and Clarke (1956), pp. 118–19; Koyré (1968a), pp. 59–60, 139, 141–6; Ross (1974), (1978), (1982); Coudert (1978), pp. 106–14; Weimann (1978); Westfall (1980), pp. 472, 648, 730, 749–50, 772–3, 779; Hall (1980), pp. 145, 149, 157, 161–4, 221, 224; Hübener (1983), pp. 103–12; Aiton (1985), pp. 18, 74, 92.

112 Leibniz, *Disc. mét.*, 22; *PNG*, 1–4; *Mon.*, 8–19, 56–75; *Nouv. ess.*, pref., 1.1.1, 2.27.14; (1969), pp. 157–62, 269–70, 287–9, 338–9, 343, 433, 454–6, 460, 503–4, 586, 614, 623; 586, 623; Martin (1964), pp. 139–42, 166–8; Michel (1973), pp. 141–9; Broad (1975), pp. 85, 87, 90–2, 94–7, 135–6; Becco (1978), pp. 119–41; Merchant (1979), pp. 255–69; Rescher (1979), pp. 70–1, 76–7; Butts (1980); Mittelstrass (1981), p. 156; Mates (1986), pp. 37–9, 199, 204–5; Aiton (1985), p. 201; Clulee (1988), pp. 77–96.

113 Leibniz, *Disc. mét.*, 9–12; *Nouv. ess.*, 1.1.1, 2.27.14, 3.10.15; *Théod.*, disc. prelim. 9–11; 1.19, 112, 372; (1969), pp. 93–5, 100–102, 260–88, 342, 409, 432, 441, 454–5, 496, 499, 554–5, 587–9, 592–4, 631–2, 655–6, 656–7, 663; Politella (1938), pp. 120–1; Loemker (1955), p. 43; Iltis (1973), pp. 348–52; Broad (1975), pp. 3, 49–56, 67–9, 75–86; Allen (1983), pp. 4, 8–9; Ross (1983), pp. 126–34; Aiton (1985), pp. 196–9, 276–7; Mates (1986), p. 191.

114 Leibniz, *Disc. mét.*, 9, 14, 22; *PNG*, 3–4, 12–18; *Mon.*, 50–70; *Nouv. ess.*, pref.; (1969), pp. 157–62, 268–9, 288–9, 338–9, 343, 347–8, 457–9, 459–60, 494, 503–4, 586–7; Broad (1975), pp. 87, 99–101, 135–6; Rescher (1979), pp. 65–6; Mates (1986), pp. 205–6.

115 Leibniz, *Disc. mét.*, 10–13, 33–4; *PNG*, 3; *Mon.*, 56–64, 79–81; *Nouv. ess.,* 3.6.24; (1969), pp. 94–102, 110–12, 115–17, 139, 157–8, 173, 189, 268–71, 275–6, 287–8, 338–9, 342–3, 347–8, 433–6, 456–9, 459–60, 503–4, 511–13, 587, 614; Gueroult (1967), p. 173; Martin (1964), pp. 128, 139–42, 166–8; Broad (1975), pp. 54. 65, 69, 85, 90–2, 99–101; Rescher (1979), pp. 65–6, 76–7, 80; Allen (1983), pp. 15, 19; Aiton (1985), pp. 18, 74, 92, 193–4; Mates (1986), pp. 192, 204–6.

116 Agrippa (1600), I, 1–4; (1651); (2003); Leibniz (1969), p. 101; on rationalism, see also Strauss (1988), pp. 27–9, commenting on Edelstein (1937).

117 Berkeley (1948–57), I, 3–5, 76, V, 3–23, 90–1, 126–51; Kant (1912); Newton (1958), pp. 433–6, 444–74.

118 For occultism in the Enlightenment, I have followed Monod (2013), especially pp. 8, 16–18, 119–22, 189, 227, 232, 245, 249, 252–7, 267–70, 274–9, 281, 290–1, 295–9, 338; see also Darnton (1970). After the earlier Enlightenment, where Monod locates Boyle, Locke, and Newton, he sees "the occult" as having collapsed in England by 1715 but then reviving after 1760.

119 Leibniz and Clarke (1956), p. 94; cf. Schaffer (1985), pp. 135–9; Kant (1977), p. 57; see also Spinoza, *Eth.* 5. pref., accusing Descartes of claiming what is "more occult than any occult quality."

15. WHO KILLED DABHOLKAR?

1 A Zande saying reported by Evans-Pritchard (1937), p. 263.

2 Evans-Pritchard (1937), pp. vii–ix, 1–7: *Zande* is singular, *Azande* is plural.

3 Evans-Pritchard (1937), p. 13.

4 Evans-Pritchard (1976).

5 Evans-Pritchard (1937), pp. 21–2, 30, 40.

6 Evans-Pritchard (1937), pp. 33–8, 81–2.

7 Evans-Pritchard (1937), p. 65.

8 Evans-Pritchard (1937), pp. 65, 73–7.

9 Evans-Pritchard (1937), pp. 85, 148–9.

10 Evans-Pritchard (1937), pp. 258, 264, 371–2.

11 Evans-Pritchard (1937), pp. 362–5.

12 Evans-Pritchard (1937), pp. 271–80, 278–9, 314.

13 Evans-Pritchard (1937), pp. xxii, 281–7, 294–7, 314–22; Section 2 of this chapter.

14 Evans-Pritchard (1937), p. 544.

15 Evans-Pritchard (1937), p. 423.

16 Evans-Pritchard (1937), pp. 440–1, 447–8.

17 Evans-Pritchard (1937), pp. 449–50, 453.

18 Evans-Pritchard (1937), pp. 463–5.
19 Evans-Pritchard (1937), pp. 333, 417, 441–2; (1962), pp. 162–203.
20 Evans-Pritchard (1937), pp. 8–12.
21 Evans-Pritchard (1937), p.440; Chapters 2.1, 14.8 of this book, where the Philosopher's Stone is an instrument for talking to spiritual persons, not a person to be addressed.
22 Evans-Pritchard (1937), pp. 8–11.
23 Wittgenstein (1979), pp. 1, 8; Ackerman (1987), pp. 301–3; Monk (1991), pp. 309–12; see also MacIntyre (1962), (1964);Winch (1964); Tambiah (1990), pp. 54–64.
24 Aug. *Conf.* 1.8;Wittgenstein (1979), p. vi; *T* 3, 7; *PI*, 1; Monk (1991), p. 309.
25 Evans-Pritchard (1933); (1937), p. 12; (1965), pp. 24–30: in the early '60s, Evans-Pritchard described Frazer as "the best-known name in anthropology" and *The Golden Bough* as "a work of immense industry and erudition," while criticizing its "intellectualist" views as unoriginal (derived from Edward Tylor) and incorrect because the "misapplication of ideas" diagnosed by Frazer (see later in the chapter) is not a psychological mistake, as he thought, but a social habit; Evans-Pritchard had spelled this out in an article in 1933, before finishing his book on the Azande.
26 Frazer (1922), pp. 64–5.
27 Frazer (1922), pp. 57–60.
28 Frazer (1922), pp. 43, 57; Evans Pritchard (1969), pp. 35–6.
29 Hume, *Treatise*, 1.1.4, 3.6.
30 Frazer (1922), pp. 12–13.
31 Frazer (1922), pp. 22–3.
32 Wittgenstein (1979), pp. vi, 1; Monk (1991), p. 309.
33 Wittgenstein (1979), pp. 1, 7.
34 Wittgenstein (1979), pp. 5, 12; n. 31 of this chapter.
35 Wittgenstein (1979), p. 13.
36 Mauss and Hubert (1902–3); for Pocock's introduction to Mauss and Hubert (1972), see pp. 1–6, and pp. 7–24 for the texts cited here.
37 Burchard of Worms, *Corrector*, 5.60–70, 151–3, 170–80; for an older English translation and introduction, see McNeil and Gamer (1938), pp. 321–45; ritual, even unmentioned, might or might not be part of the procedure for finding things by magic: see Thomas (1971), pp. 212–23.
38 Pocock in Hubert and Mauss (1972), p. 2; Frazer (1922), pp. 64–5.
39 Pocock in Hubert and Mauss (1972), p. 4; Lévi-Strauss, "Introduction," in Mauss (1968), pp. 39, 43: also Lévi-Strauss (1966), p. 55: "The terms never have any intrinsic significance. Their meaning is one of 'position' – a function of the history and cultural context on the one hand and of the structural system on the other."
40 Lévi-Strauss (1966), pp. 217-4; (1967), pp. 161–79, 221.
41 Barry (2013); see Quack (2011) for the context and an analysis.

ABBREVIATIONS AND BIBLIOGRAPHY

ABBREVIATIONS

Abbreviations for biblical, classical, patristic, rabbinical, medieval, and some other sources follow the examples listed here:

LS	*A Greek-English Lexicon* (1968), ed. H. Liddell, R. Scott et al., Oxford: CP.
OCD	*The Oxford Classical Dictionary* (1996), ed. S. Hornblower and A. Spawforth, Oxford: OUP
OLD	*Oxford Latin Dictionary* (1982), ed. P. Glare, Oxford: CP.
SBLH	*The SBL Handbook of Style for Ancient Near Eastern, Biblical, and Early Christian Studies* (1999), ed. P. Alexander et al., Peabody, Mass.: Hendrickson.

Other Abbeviations are

AHDLMA	*Archives d'histoire doctrinale et littéraire du moyen âge*
AHR	*American Historical Review*
AmS	*American Scientist*
APQ	*American Philosophical Quarterly*
AS	*Annals of Science*
AT	*Œuvres de Descartes* (1964–76), ed. C. Adam and P. Tannery, Paris: Vrin.
BHM	*Bulletin of the History of Medicine*
BHR	*Bibliothèque d'Humanisme et Renaissance*
BJHS	*British Journal for the History of Science*
CE	*Contemporaries of Erasmus: A Biographical Register of the Renaissance and Refomatio*n (2003), ed. P. Bietenholz and T. Deutscher, Toronto: UTP.

C.H.	*Corpus Hermeticum* (1946–54), ed. and trans. A. Festugière and A. Nock, Paris: Belles Lettres.
CHHP	*The Cambridge History of Helenistic Philosophy* (1999), ed. K. Algra, J. Barnes, J. Mansfeld, M. Schofield, Cambridge: CUP.
CHLGEMP	*The Cambridge History of Later Greek and Early Medieval Philosophy* (1970), ed. A. Armstrong, Cambridge: CUP.
CHRP	*The Cambridge History of Renaissance Philosophy* (1987), ed. Charles Schmitt et al., Cambridge: CUP.
CHSEMS	*The Cambridge History of Science,* Vol. III: *Early Modern Science* (2006), ed. K. Park and L. Daston, Cambridge: CUP.
CHSCP	*The Cambridge History of Seventeenth-Century Philosophy* (1998), ed. D. Garber and M. Ayers, Cambridge: CUP.
CJP	*Canadian Journal of Philosophy*
ColEn	*Columbia Encyclopedia* (1993), ed. B. Chernow and G. Vallasi, New York: ColUP.
ColUP	Columbia University Press
CorUP	Cornell University Press
CP	Clarendon Press
CT	*The Classical Tradition* (2010), ed. A. Grafton, G. Most and S. Settis, Cambridge: Belknap Press.
CTC	*Catalogus translationum et commentariorum: Medieval and Renaissance Latin Translations and Commentaries, Annotated Lists and Guides* (1960–), ed. F. Kranz, P. Kristeller and V. Brown, Washington, D.C.: CUAP.
CUAP	The Catholic University of America Press
CUP	Cambridge University Press
DBI	*Dizionario biografico degli italiani*, Rome: Treccani.
De vita1–3	Ficino (1989), pp. 102–393.
DSB	*Dictionary of Scientific Biography* (1970–80), ed. C. Gillispie, New York: Charles Scribner's Sons.
EB	*Encyclopedia Britannica*
ER	*Encyclopedia of the Renaissance*
ESM	*Early Science and Medicine*
GCFI	*Giornale Critico della filosofia italiana*
GSLI	*Giornale storico della letteratura italiana*
HLQ	*Huntington Library Quarterly*
HPQ	*History of Philosophy Quarterly*
HS	*History of Science*

HUP	Harvard University Press
HWP	*Historisches Wörterbuch der Philosophie* (1972), ed. J. Ritter, Darmstadt: Wissenschaftliche Buchgesellschaft
ITRL	*I Tatti Renaissance Library*
JHI	*Journal of the History of Ideas*
JHP	*Journal of the History of Philosophy*
JHUP	The Johns Hopkins University Press
JMH	*Journal of Modern History*
JMRS	*Journal of Medieval and Renaissance Studies*
JRS	*Journal of Roman Studies*
JTS	*Journal of Theological Studies*
JWCI	*Journal of the Warburg and Courtauld Institutes*
K	*Claudii Galeni opera omnia* (1821–33), ed. K. Kühn, Leipzig: Knobloch.
K.K.	*Korê Kosmou*, Excerpt XXIII in *C.H.,* IV.
Kyr.	*Die Kyraniden*, ed. D. Kaimakis, Meisenheim am Glan: Anton Hain.
MLR	*Modern Language Review*
MP	*Modern Philology*
MRW	*Magic, Ritual and Witchcraft*
MUP	Manchester University Press
NHC	*Nag Hammadi Codices*, in *The Nag Hammadi Library in English* (1988), ed. and trans. J. Robinson, San Francisco: Harper and Row.
OED	*Oxford English Dictionary*
OUP	Oxford University Press
PGM	*Papyri Graecae Magicae*, translated in Betz (1986)
PIMS	Pontifical Institute of Mediaeval Studies
PL	Ficino's introductory letter in his *Pimander*, translated in Chapter 8.4 of this book from Ficino (1471).
PR	*The Philosophical Review*
PSUP	Pennsylvania State University Press
PUF	Presses Universitaires de France
PUP	Princeton University Press
RCSF	*Rivista critica di storia della filosofia*
RE	*Paulys Realencyclopädie der classischen Altertumswissenschaft unter Mitwirkung zahlreicher Fachgenossen* (1893), ed G. Wissowa, Stuttgart: Metzler.
RES	*Review of English Studies*
RHR	*Revue de l'histoire des religions*

RHS	*Revue d'histoire des sciences*
RQ	*Renaissance Quarterly*
RSR	*Recherches de science religieuse*
SCG	*Summa contra gentiles* (Aquinas)
SEP	*Stanford Encyclopedia of Philosophy* (online)
SR	*Studies in the Renaissance*
ST	*Summa theologiae* (Aquinas)
SUNYP	State University of New York Press
SUP	Stanford University Press
UChP	University of Chicago Press
UCP	University of California Press
UPP	University of Pennsylvania Press
UTP	University of Toronto Press
UWP	University of Wisconsin Press
YUP	Yale University Press

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