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MEDIÉVAL IMAGINATION

Alexander N. Gabrovsky



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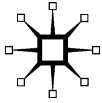
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CHAUCER THE ALCHEMIST

PHYSICS, MUTABILITY, AND THE
MEDIÉVAL IMAGINATION

Alexander N. Gabrovsky

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CHAUCER THE ALCHEMIST

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To my parents

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ABBREVIATIONS

All quotations from Chaucer's works are drawn from *The Riverside Chaucer*, edited by Larry D. Benson, 3rd edition (Boston: Houghton Mifflin, 1987). Quotations from the *Canterbury Tales* are cited parenthetically by roman numerals for the fragments and Arabic numerals for line numbers. Chaucer's *Troilus and Criseyde* is also identified in parentheses by roman numerals for books and Arabic numerals for line numbers. For clarity, all other texts are cited by Arabic numerals only. Chaucer's works have the following abbreviations for their titles:

| | |
|-----|----------------------------------|
| CT | <i>Canterbury Tales</i> |
| CYT | <i>The Canon's Yeoman's Tale</i> |
| FT | <i>The Franklin's Tale</i> |
| HF | <i>The House of Fame</i> |
| KT | <i>The Knight's Tale</i> |
| PF | <i>The Parliament of Fowls</i> |
| Tr | <i>Troilus and Criseyde</i> |
| WBT | <i>The Wife of Bath's Tale</i> |

The following abbreviations are also used in the notes:

| | |
|------|--|
| CR | <i>The Chaucer Review</i> |
| EETS | <i>Early English Text Society</i> |
| ELH | <i>English Literary History</i> |
| JEGP | <i>Journal of English and Germanic Philology</i> |
| MP | <i>Modern Philology</i> |
| PMLA | <i>Publications of the Modern Language Associations of America</i> |
| SAC | <i>Studies in the Age of Chaucer</i> |
| SATF | <i>Société des Anciens Textes Français</i> |
| SEP | <i>The Stanford Encyclopedia of Philosophy</i> |
| SP | <i>Studies in Philology</i> |

PART I

PHYSICS

CHAPTER 1

INTRODUCTION: CHAUCER'S SUBLUNAR REGION OF MUTABLE FORMS

The detailed richness of Chaucer's storytelling and the subtle mechanics of movement in his narrative process can be seen as reflections of the poet's deep and long-standing fascination with the concept of motion itself—a subcategory of “change” in the medieval world. Within Chaucer's plotted structures, narrative climax tends to coincide with a pivotal moment of material transformation taking place in the sub-lunar region of mutability (literally, “below the sphere of the moon”). Underlying structural patterns of interconnected action, interspersed with commentary and dialogue, will culminate in a single, phenomenal incident of *physical* change. The *Canterbury Tales* illustrates this narrative technique quite patently. Consider the rapid corruption of Arcite's body in the *Knight's Tale*, the swift transformation of the loathly lady in the *Wife of Bath's Tale*, the instantaneous disappearance of the black rocks in the *Franklin's Tale*, the transformation of the child in the *Prioress's Tale*, the alteration of human blindness into the sight of angels in the *Second Nun's Tale*, and the white crow's sudden metamorphosis in the *Manciple's Tale*. Indeed, change in Chaucer's world is ubiquitous, ongoing, and inexorable. Barry A. Windeatt rightfully remarks on how Chaucer's inventive literary structures “contain the narrative within a commentary that has transformed meaning by the time the poem reaches its resolution in the structures Chaucer has devised (‘That thow be understonde, God I biseche!’ *Troilus* v, 1798).”¹ Climactic transformations of physical matter function, we shall find, as visible signposts for the unfolding literary transformations that underlie these highly schematic narrative structures. Moreover, this narrative strategy creates a personal frame of reference that allows each of Chaucer's characters to engage in his or her own

unique mode of interpretation as it relates to a story's moment and *locus* of change.

Indeed, it is not surprising that Chaucer incorporates significant events of transformation into his poetry. After all, Chaucer was deeply influenced by the anonymous author of the Franciscan *Ovide Moralisé*, the first full-length French translation of Ovid's *Metamorphoses*. Ovid declares—explicitly—the theme of change in his opening line: “In nova fert animus mutatas dicere formas / corpora” (I intend to speak of forms changed into new entities).² As we see in the *Troilus*, Venus makes Jove amorous of mortal women “And in a thousand *formes* down hym sente” (III.20, emphasis mine). But interestingly, Chaucer frequently avoids using Ovidian metamorphoses, despite his borrowings of Ovidian material.³ This obvious omission is deliberate, rather than negligent, and serves to heighten our awareness of Chaucer's profound interest in a subject matter that he is reluctant to casually reference in a perfunctory manner. Yet, like Ovid, Chaucer is attracted to the phenomenal event of transformation itself and carefully renders it into poetic language that is uniquely his own. That said, the idea of transformation is clearly inseparable from the very art of storytelling itself. As Robert M. Longworth opines, “Transformation, after all, is the central business of literature.”⁴

While the metaphorical scope of transformation is potentially limitless, it is possible to objectively examine the various *literal* (rather than literary) transformations in Chaucer's poetry. To this I would add that Chaucer's literal transformations are far more intractable than the common stock of magical devices found in conventional plots of romance, or the straightforward miracles recorded in a medieval vita. Rather, Chaucer carefully frames the *General Prologue* to the *Canterbury Tales* by articulating natural processes of material change for the terrestrial—or sublunar—region. According to the medieval cosmological picture, the concave inner surface of the moon separates the earthly mutable region from the eternally unchanging heavenly realm, which borders the convex sphere of fire and comprises both the rotating planets and the fixed stars. Hugh of St. Victor asserts this medieval cosmological perspective in his *Didascalicon*:

Astronomers (*mathematici*) have divided the world into two parts: into that, namely, which stretches above the sphere of the moon and that which lies below it. The superlunary world, because in it all things stand fixed by primordial law, they called “nature,” while the sublunary world they called “the work of nature,” that is, the work of the superior world, because the varieties of all animate beings which live below by the infusion of life-giving spirit, take their infused nutriment through invisible emanations from above, not only that by being born they may grow but also that by being nourished they may continue in existence.⁵

The sublunar region of mutability is therefore “fixed by primordial law” according to the unchanging perfection of the superior world that lies beyond the sphere of the moon. It is the influence of the celestial region on the terrestrial that constitutes the main thrust of natural philosophy (*philosophia naturalis*). Aristotle set this idea in motion in his *Meteorologica* (Meteorology), with his assumption that the sublunar region “has a certain continuity with the upper motions; consequently all its power is derived from them” (1.2).⁶ This cosmic transmission brings about a host of effects, such as tidal movements, seasonal changes, magnetic influence on minerals, light, and the generation of metals. As Jacqueline Tasioulas sums up, “The planets influence the physical world, and anything that consists of matter will feel their effects. Plants, animals, and the human body are all subject to the movement of the stars by virtue of the fact that they are physical things in a physical world.”⁷ We might take for granted this commonplace idea so deeply rooted in medieval literature. The *Pearl*-poet, for example, takes frequent pains to distinguish between the labile world situated beneath the moon and the celestial region of permanence:

Der entreȝ non to take reset
 Ðat bereȝ any spot an-vnder mone.

The mone may Ðerof acroche no myȝte;
 To spotty ho is, of body to grym,
 And also Ðer ne is neuer nyȝt.
 What shulde Ðe mone Ðer compas clym
 And to euen wyth Ðat worþly lyȝt
 Ðat schyneȝ vpon Ðe brokeȝ brym?⁸

For Chaucer, however, it is precisely the *physics* of sublunary transformation—the mysterious process of corruption and decay, concomitant with birth and renewal—that captivates his poetic imagination with framed attention to the event itself. In the *Physician's Tale*, the goddess Nature lays claim to the sublunary realm, declaring, “ech thyng in my cure is / Under the moone, that may wane and waxe” (VI.21–3). Moreover, an analysis of Nature’s physical transformations cannot exclude a discussion of medieval physics, as their mutual subject matter is itself “change.” This is supported by Aristotle’s well-known statement on Nature: “Nature is the subject of our enquiry, and nature is a principle of change, so if we do not understand the process of change, we will not understand nature either” (3.1).⁹ Hugh of St Victor clarifies, “The business of physics, however, is to analyze the compounded actualities of things into their elements.”¹⁰ That is to say, medieval physics attempts to

understand Nature by reducing complex matter into its basic constituents or principles (i.e., “elements”), which undergo physical change from one element into another. For Aristotle and his medieval followers, natural philosophy was fundamentally the study of change and all its attributes.

It is worthwhile to pause for a moment in order to trace the philosophy of change to its classical origins. Heraclitus (ca. 535–475 BC), a pre-Socratic from the city of Ephesus in Ionia, first established a metaphysics for “change” with his insistence that all things flow within an equilibrium of oppositional contraries. Not long after Heraclitus heralded his affirmation of change, Parmenides of Elea (fl. 480 BC) wrote a three thousand-line philosophical poem (“On Nature”) that expressed his failure to accept the possibility of “being” arising from “non-being,” or something from nothing. In other words, he contradicted Heraclitus with the assertion that change is a logical impossibility. In fact, Zeno’s paradox, which considers change of place (i.e., motion), is a well-known demonstration of this philosophical crux. But for Aristotle, it was commonsense to acknowledge that transient changes take place in the sensible world. Aristotle first accepted the reality of change and then proceeded to construct a suitable framework for its existence. How did Aristotle bypass the Parmenidean problem? As will become clear, his answer lies in the distinction between *potential* and *actual* modes of being—in association with his doctrine of matter and form and the concept of privation—which enabled him to ignore the complications of transitioning to “being” directly from “non-being.”

The influence of Aristotle on medieval science cannot be overstated. Throughout the twelfth and thirteenth centuries, medieval philosophers more or less wrote addenda to the Latin translations of the Stagirite’s writings; this includes (but is not limited to) the *Physica* (Physics), *De caelo* (On the Heavens), *De Anima* (On the Soul), *Meteorologica*, and *De generatione et corruptione* (On Generation and Corruption). Virtually all beginning arts students were required to learn these core scientific texts before advancing to higher degrees in medicine, civil or canon law, and theology.¹¹ Chaucer’s portrait of the Oxford clerk in desperate need of “Twenty bookes, clad in blak or reed, / Of Aristotle and his philosophie” (l.294–5) is no exaggeration, as Aristotle’s *libri naturales* (natural books) were indeed codified as part of the required curriculum for the Master of Arts degree at both Oxford and Paris. Aristotle in the Middle Ages was simply “the Philosopher,” as he was universally called. This is not to say that Aristotle’s theories remained undisputed. It was, in fact, the medieval commentator’s task to point out inconsistencies, using the *questio* method to reinterpret the Aristotelian corpus in such a way as to unify the related concepts of matter, space, time, motion, and the like. The discipline of physics, therefore, stands out in the Middle Ages as devoting “much more



Figure 1.1 The tomb of Aristotle on an island near Stagira with Troy in the background. British Library Additional 24189, fol. 6v. Sir John Mandeville, Illustrations for *Mandeville's Travels* (Bohemia, early fifteenth century).

attention to fundamental issues that we would classify as ‘metaphysical’ or ‘philosophical,’¹² and it is not surprising that an analysis of Chaucer’s handling of sublunary physics expands our understanding of his poetry in a distinct and profound way (figure 1.1).

Chemical Combination: Medieval Theories of Matter and Form

Natural philosophy in the Middle Ages dealt with the progression from potential to actual modes of being, an idea seemingly simple enough

but, in actuality, extremely difficult for commentators to pin down. A rigorous analysis of “change” required the analytical tools of scholastic philosophy and inherited a technical vocabulary out of necessity. The formal study of change incorporated as its basis such phrases as “primary matter,” “substantial form,” and “accidental form.” To clarify, a “form” (which mediates the properties of a thing) combines inextricably with “primary matter” (i.e., propertyless matter) to make all objects in the sublunary realm (called “substances,” the material things endowed with these properties). Matter is devoid of structure but is acted upon by form, a kind of organizing principle, to make it the object that it is (the substance). To put it another way, matter is *informed* to make a substance. Chaucer makes casual reference to this complex process in the *Physician’s Tale*: Nature’s responsibility, as God’s “vicair general,” is “To *forme* and peynten erthely creaturis” (vi.21, emphasis mine). Paul Beekman Taylor explains how the Physician envisages Nature as “God’s mediator for the shaping of earthly forms as well as the principle wherby those forms are capable of taking on new matter and shape.”¹³ In the *House of Fame*, creatures are also “*formed* be Nature” (iii.2039, my italics). Nature makes an appearance in the *Parliament of Fowls* as “the vicair of the almyghty Lord, / That hot, cold, hevye, lyght, moyst, and dreye / Hath knyght by evene noumbres of acord” (379–81). This is a restatement of the fundamental principle behind the Empedoclean element-forms (i.e., “hot, cold, hevye, lyght, moyst, and dreye”). The First-Mover has arranged (“hath knit”) these primary qualities in possible combinations comprised of “even noumbres”: two non-opposite qualities (e.g., hot and wet). This is the chemical basis for all inter- and intra-chemical bonds (the “acord”) among the four elements (earth, air, water, and fire). Indeed, the contrary qualities (hot/cold, wet/dry, heavy/light, and coarse/fine) are the driving energies for physical interchange. Within the sublunary region of change, it is therefore Nature’s role to oversee the constant chemical combinations that arise from the mutual attraction of “like” qualities. It is fundamentally Aristotle’s matter-form theory that provides an explanation for the generation of the elements, the constant transmutations of one element into another via a succession of forms.

Medieval authors distinguish between two types of form: “substantial forms” (the essential properties that give a thing its independent, fundamental mode of being) and “accidental forms” (secondary properties that are the incidental modes of being). An understanding of form and its related meanings is crucial to an analysis of Chaucer’s terrestrial transformations. Needless to say, Chaucer utilizes this philosophical lexicon with relative ease throughout his poetry. By way of example, he employs

this terminology in the *Pardoner's Tale* in order to make a Lollard joke on transubstantiation:¹⁴

These cookes, how they stampe, and streyne, and grynde,
 And turnen *substaunce* into *accident*
 To fulfille al thy likerous talent!

(vi.539–41, emphasis mine)

The humor lies in the fact that Lollards denied any possibility for the transformation of a thing's "substaunce" while maintaining its accidental forms. This distinction between substantial and accidental forms also appears in Troilus's attempts to convince Criseyde that "folie is, whan man may chese, / For accident his substaunce ay to lese" (*Tr.*, iv.1505). Related to Troilus's use of the words "accident" and "substaunce" is the natural law that "matere occupieth place" (*Tr.*, v.1322). In the *Friar's Tale*, the devil claims that he "wol us swiche *formes* make / As moost able is oure preyes for to take" (iii.1471–2, emphasis mine). It might be that the devil introduces new "forms" into matter in order to assume a pleasing shape. The summoner then questions, "Make ye yow newe bodies thus alway / Of elementz?" (iii.1505–6). The devil then responds ambiguously, stating that he has the capacity to feign a particular shape or, alternatively, use dead bodies for actual props. It is possible that Chaucer's Friar Huberd is inserting into his tale a reference to the famous mendicant debate on the association between body and soul in terms of form and matter—that is, the issue of whether or not man's rational soul has a form and matter of its own. For Aquinas, the rational soul is a substantial form without any matter attached to it, a position ultimately derived from Aristotle. At any rate, Chaucer clearly demonstrates his keen awareness of the conceptual ideas rooted in natural philosophy.¹⁵

In his *Consolatio philosophiae* (Consolation of Philosophy), Boethius repeatedly draws our attention to the Aristotelian principle of the four elements and their contrarious qualities as the basis for all physical transformations. He explains how God's ordinance "atemprith the elementz togidre amonges hemself, and transformeth hem by entrechangeable mutacioun" (*Boece* iv.pr6). Natural law dictates the particular ways in which element-forms transmutate via an interchange of qualities. In a similar vein, Book 2, metrum 8, of the *Boece* begins with the observation "That the world with stable feyth varieth accordable chaungynges; that the contrarious qualities of elementz holden among hemself allyaunce perdurable." The chemical bonds of Nature are constantly being dissolved and reconstituted in a succession of forms, transforming the elements into one another. Boethius then extends this chemical formula to the motion

of larger bodies (e.g., the “sonne,” “erthe,” and the “see,” which correspond to fire, earth, and water, respectively). Finally, Boethius concludes, “Al this accordaunce [and] ordenaunce of thynges is bounde with love, that governeth erthe and see, and hath also comandement to the hevене.” Chaucer borrows heavily from Boethius for the Neoplatonic idea of cosmic love as a force binding all things. Theseus famously repeats this notion in the *Knight's Tale*: “For with that faire cheyne of love he bond / The fyr, the eyr, the water, and the lond / In certeyn boundes, that they may nat flee” (I.2991–3). Theseus's First-Mover speech provides a template for imagining love as the ultimate force binding all objects in the terrestrial and celestial realms, and in Chaucer's *Troilus and Criseyde*, the *Canticus Troili* refers to love as the binding force linking dissimilar elements: “That elementz that ben so discordable / Holden a bond perpetually duryng” (III.1753–4). These and other references to the “elementz” can be interpreted within the whole context of Chaucer's fictional Troy and its kingdom of element-forms in constant flux.

Although the bond of love is an age-old topic in Chaucer criticism, there has been little consideration of the relationship between both the chemical and literary bonds of love. According to the medieval commentators on Aristotle, when two elements combine, a new substantial form emerges from the mixture (*mixtum*). Virtually all philosophers in the Middle Ages attempted the difficult task of explaining the precise nature of this chemical bond. How did this new substantial form emerge? Do the elements still persist in the compound? What is responsible for this binding force between the elements? What constitutes this new substantial form that emerges from the *mixtum*? Not surprisingly, the *generans* of the new substantial form was thought by nearly all medieval philosophers to be God himself, or at least some form of higher celestial being. Similarly, the Neoplatonic thrust of Theseus's speech establishes the First-Mover as the *generans* for this binding force between elements. Stephen A. Barney thus summarizes Chaucer's own version of the chain of love as “nearly the Empedoclean love, the Platonic idea of the relation of the things of this world to the One.” He adds, “For Boethius, and for Theseus, the idea of the cosmic bond of love is primarily of value to humans *as consolation for the perceived mutability of creatures*” (emphasis mine).¹⁶ What appears to be at issue here is the relationship between the so-called bonds of love and the chemical bonds among the element-forms. But more crucially, the physical bonds existing in the sublunar world of mutability remain unambiguously as *chemical* bonds—that is to say, the weak forces acting as the glue between non-opposite qualities. Chaucer construes the cosmic bonds of love in terms of chemical combination, the complicated process of *generatio* and *corruptio* among element-forms. More insidiously, the bonds of

human love in the *Troilus* are therefore, in chemical terms, highly *reversible*. Like Nature's chemical combinations, human bonds of love are protean substance shifters: the reversible actions of "bynde" and "unbond"—or in love terms, the "twynnyng of us tweyne" (*Tr.*, iv.1303)—underlie the instability of matter and, by extension, human relationships.¹⁷ In other words, dramatic action and perceptual experience can hardly support the notion of cosmic love. What is more, empirical observation can only provide tangible evidence for chemical combination as the active principle for all matter. Indeed, the human body itself is a composite of four elements, a corporeal *mixtum*,

That ther nys erthe, water, fir, ne eir,
Ne creature that of hem maked is

(*KT*, i.1246–7)

In the end, Aristotle's ineluctable formula for constant change applies to *all* elements in the sublunary realm, which even includes the chemical bodies of human beings.

Fourteenth-Century Clerical Cultures

It is not my intention, however, to regard the intellectual history of the Middle Ages as monolithic. The satisfaction that comes with extracting complex theories from Chaucer's "scientific" writings is liable to end up in critical pitfalls. With this strategy comes the risk of manufacturing overly abstract generalizations of medieval texts not unlike the exegetical and allegorical readings of Robertsonian critics during the mid-twentieth century. On the other hand, many of Chaucer's digressions on science, such as the Eagle's lecture on the theory of sound in the *House of Fame*, recite commonplaces of medieval scientific thinking. Even so, it is imperative to tread cautiously while engaging in this historicist project. As I have argued, the term "physics" can be misleading unless we first consider its original meaning (from Greek: φύσις, *phusis*, "nature"). Given the cultural impact of present-day science and technology, I aim to set aside my own cultural perspective as a modern reader in order to think within the context of the theoretical physics of Chaucer's day. Still, we might ask, why does medieval physics even matter to us? What can we glean from the technical information of this arcane subject? First, Aristotle's laws of physics set specific expectations for Chaucer's audience regarding what was considered physically possible in the medieval universe (notwithstanding miracles or magic). As such, it is imperative for us

to understand the effects of natural forces that operate in the background of Chaucer's world. Second, medieval physics dealt directly with significant philosophical and metaphysical questions that still engage readers today. What is the "stuff" of matter? How do we define change? What constitutes motion? Does the physical universe include continua or also indivisibles and atoms? Is it possible to have "something" from "nothing?" To what extent is there material causality in the universe?

Barry A. Windeatt's watershed article on Chaucer's fifteenth-century readers examines scribal alterations to Chaucer's texts as "the earliest line-by-line literary criticism of Chaucer's poetry."¹⁸ In a similar vein, we cannot entirely ignore the little-known fact that renaissance readers considered Chaucer to be a master-chemist.¹⁹ From this perspective, it is possible to imagine his medieval and renaissance audiences interpreting selective poems in terms of alchemy and chemical combination. Reading traces of medieval "physics" in Chaucer's texts in the exact same way as his audiences would have read them requires careful consideration of Chaucer's unique placement among university-trained courtiers and civil servants, the role of medieval universities, and the impact of fourteenth-century clerical cultures on his poetry.

Before we tread further into Chaucer's treatment of medieval physics, however, it is important to clarify the appropriateness of what might appear to be overly generalized statements regarding medieval science made throughout this book. First of all, straightforward presentations of complex and interrelated theories of medieval science are not wholly unfounded. Not only did Aristotle provide a common basis for all later medieval conceptions of physics, but also the various readings and interpretations of Aristotle's texts were surprisingly *homogeneous* throughout the Middle Ages. David C. Lindberg explains the rationale behind the consistency of ideas and shared academic trends among established medieval universities in the Latin West:

Professorial mobility was facilitated by the *ius ubique docendi* (right of teaching anywhere) conferred on the master by virtue of completing his course of study. Thus a scholar who earned a degree at Paris could teach at Oxford without interference and, perhaps more importantly, without acquiring a case of intellectual indigestion; this was possible only because subjects taught at the one did not differ markedly in form or content from those same subjects as taught at the other.²⁰

The idea of professorial mobility also extends to the high-density of foreign students in university towns and their progressive movements between geographically distant institutions. This picture of the key

institutional factors contributing to the unity of medieval learning helps us understand the extensive career paths led by ordinary schoolmen in the late medieval period. This is further supported by the well-documented topographical movements of traveling masters of the thirteenth and fourteenth centuries. Duns Scotus (AD 1265/66–1308), for example, formally studied at Oxford, but he also lectured at Cambridge, Paris, and Cologne. Similarly, Albert of Saxony (AD 1316–90) studied in Prague, Paris, and Vienna. Professional mobility was not limited to Europe's northern universities, however. The English philosopher Walter Burley (AD 1275–1344), who lectured both at Oxford and at Paris, held at least one academic debate in Italy at Bologna. Interestingly, Burley's commentaries on the *Physics* were also highly influential at the Italian universities. In addition, we might consider the academic travels of Thomas Aquinas (AD 1225–74), who began his studies at the Benedictine abbey of Montecassino but then later studied and lectured at Naples, Paris, and Cologne, often traveling back and forth between institutions.

We can attribute this fluidity of movement to the motivation and ethos of the friars, who inevitably gained much control of the universities. In fact, England's most famous friars—Duns Scotus, Roger Bacon, William of Ockham, Robert Holcot, and Robert of Kilwardby—more or less defined scholasticism in the fourteenth century. The friars universally recognized the tools of academic learning as crucial to successful ministry—a tradition born out of the Dominican strategy of employing Aristotelian logic and classical rhetoric as the most effective weapon to counter the heretical doctrines promulgated by the urban elite. Pope Innocent III (d. 1216) had recognized the new movement as a response to the pastoral challenges facing traditional religious organizations, such as the isolated Benedictine monasteries excluded from Europe's rapidly growing cities. Mendicant friars rapidly developed a uniquely international character as evangelists and missionaries, traveling widely to preach, tending to the sick (especially during the period of the Black Death), aiding the poor, and participating in the cultivation of Europe's famous universities. Unlike the cloistered monks of the traditional Cistercian or Benedictine Orders, the mendicant friars attached themselves to urban life and popular culture in order to successfully exercise an apostolic ministry.

Historical records suggest a thriving international community, comprised of peripatetic scholars, with the medieval university as its locus for the exchange of innovative ideas and the facile circulation of manuscripts. It is therefore not surprising that lectures on Aristotle's natural philosophy remained relatively homogeneous throughout the European continent, and the rigor of analysis given to Aristotle's writings provided a dialectical framework for controversial issues such as the Lollard debate

on the physics of the Eucharist or the case of alchemists' claims of transmuting base metals into silver or gold in the laboratory. From this highly summarized view, we can nonetheless begin to appreciate the medieval university as a significant and influential aspect of the culture of medieval learning and intellectual thought. However, its status as a highly specialized institution does not imply that medieval scholars should treat these intellectual communities in isolation from other important spheres of culture. On the contrary, the university interacted with its surrounding towns, providing public disputations and offering frequent public sermons "which would have provided available sophisticated models to take notes from—many of these survive as *reportationes*, too—and to emulate."²¹ This is particularly noticeable at the University of Paris. Ian P. Wei points our attention to the interactions between Parisian academics and their surrounding communities of lay people:

Masters regularly preached not only to students and each other, but also to a much wider audience, especially in Paris. Many of their sermons were preached *ad populum*, or "to the people," in the churches of Paris. These sermons for lay people were delivered in French, but written down in Latin from which they could be translated subsequently into any vernacular language. This was important because, in addition to communicating directly by preaching themselves, Parisian scholars had a profound influence on preaching across Western Europe.²²

Indeed, students educated at Paris also traveled throughout Christendom and brought with them their handbooks on preaching, which were produced in Paris. Of course, these preaching aids were intended for those who could not study at Paris but nonetheless required preaching aids for teaching. As Michael Shank puts it quite precisely, "an isolationist approach to the university is inadequate."²³

Not only were the universities intimately connected to the cities and towns surrounding them, but current members and alumni of these clerical institutions also greatly influenced policy decisions made in royal and princely courts as well as in the various urban, episcopal, and papal administrations. By way of example, Shank articulates the impact of university-trained alumni on policy-making: "The demand for academic consulting demonstrates with clarity the recognition by political authorities that university learning, esoteric though it seems to uninitiated late-twentieth-century onlookers, was neither seen, nor treated, as useless, and could provide a framework for political decisions."²⁴ He adds, "By dint of their skills and numbers, these former students were changing the social composition of European courts."²⁵ The frequent demand for

academic consultants is supported by John Wyclif's role as a royal delegate, who journeyed with Bishop Gilbert to Bruges in 1374. Wyclif was selected to negotiate on the king's behalf on the basis of his university training and valued expertise in royal rights and church endowments. Ralph Hanna points out that "his position was far from unique," adding to this the interesting case of Edward I, who "in addition to scouring monastic libraries for chronicle precedents, called in Oxford law dons as advisors during 'The Great Cause' (the question of the lordship of Scotland) in the 1290s."²⁶ Not surprisingly, Franciscans and Dominicans rose to prominence among court circles in England as chaplains and confessors to famous monarchs like Henry III, who admitted friars into his professional council.

We can appreciate the profound impact of university-trained mendicants on the fabric of medieval society by examining their role as royal envoys and academic consultants. By way of example, a Franciscan friar was sent on a diplomatic mission in 1233 to quell the violence in the Welsh Marches between the king and Richard the Earl Marshal. Similarly, King Edward I of England sent two mendicant friars to the court of Philip IV in 1294 in order to repudiate his vassalage in Gascony. The friars were also appointed as ambassadors and missionaries to remote lands such as Egypt, Syria, and the Holy Land. King Louis handpicked a Dominican friar to travel as ambassador to the Mongolian Khan in 1247.²⁷ There is also a peculiar but no less significant connection to be made between princely counseling and natural science. The relationship between Aristotle and Alexander was famously known in the Middle Ages, and it was believed that Aristotle wrote the *Secretum secretorum* at the request of his pupil, Alexander the Great. This compendium of knowledge (in fact, an Arabic "Mirror of Princes" that was misattributed to Aristotle) was immensely popular in the Middle Ages and attests to the importance of natural philosophy to royal conduct.

More important to our discussion is the fact that the university was inextricably tied to Chaucer's increasingly administrative roles in his career as a civil servant and court diplomat. In the past decade of scholarship, Chaucer's keen awareness of the scientific trends that rippled through Oxford, Cambridge, and Paris has been clearly established.²⁸ Interestingly, J. D. North concludes that Chaucer's knowledge of astronomy "far surpassed that of an ordinary university graduate."²⁹ While it is doubtful if Chaucer himself ever enrolled at a university as one of the many undocumented short-termers (one critic has in fact entertained this possibility),³⁰ it is indeed not surprising that Chaucer reveals intimate knowledge of Oxford and Cambridge. Edward II founded King's Hall—the "Soler Halle at Cantebregge" from the *Reeve's Tale* (l.3990)—in order

to provide clerical training for civil servants entering his administration, recruits known as “the King’s childer.”³¹ Derek Brewer concludes with certainty that a courtier and civil servant like Chaucer knew “the King’s Hall and a number of its fellows well, not only because of an entertainment of Parliament at the college in 1388, which has been referred to, but also because of the peculiar nature of the institution itself.”³² It is known that Chaucer’s immediate circle of lawyers and civil servants of the court included such trained schoolmen as former King’s Hall fellows Richard Ronhale and Richard de Medford, who are “several times associated with Chaucer.”³³ Chaucer’s frequent diplomatic trips to France and Italy would certainly include royal delegates with university training, especially since these political negotiations required specialized training in civil law.

Chaucer may have learned about the latest mathematical and scientific developments at Oxford from his philosopher friend Ralph Strode, a Fellow at Merton from 1359 to 1360.³⁴ Even so, it is worthwhile to note the important fact that *all* university students acquired a firm grounding in Aristotelian natural philosophy. From this vantage point, medieval physics should not be viewed as highly specialized knowledge to the same extent as medicine or law. Notwithstanding the Strode connection and Chaucer’s other personal acquaintances, the poet’s minute descriptions of the schoolmen from the *Miller’s Tale* and the *Reeve’s Tale* betray Chaucer’s genuine fascination and deep fondness for the clerkly cultures of fourteenth-century English schools. Needless to say, the poet’s acute descriptions of university life, mingled with the accuracy of detail used to establish a local setting, are indeed significant to Chaucer’s interest in these energized intellectual spaces.³⁵

Natural Impossibilities and Subcategories of Change

Chaucer’s dramatic constructions of transformative phenomena are typically natural impossibilities: phenomena or imaginings of material change that appear to violate Aristotelian principles of physics for the terrestrial, or sublunar, region. In the *Reeve’s Tale*, the miller chides that the Cambridge students (Aleyn and John) “konne by argumentes make a place / A myle brood of twenty foot of space” (l.4123–5). William Woods notes how this comic jibe resonates with Albert of Saxony’s elaborate thought experiment, where God could create within a millet seed “a space of 100 leagues, or 1,000, or however many are imaginable,” and all this is “without altering its dimensions.”³⁶ As Edward Grant points out: “in the fourteenth century, as a consequence of various articles condemned in 1277, use of the imagination was emphasized in

counterfactual questions about cosmic conditions and circumstances that were regarded as naturally impossible in Aristotle's world."³⁷ Chaucer's miller—who laughs at the abstract, clerkly alterations of his “meagre” 20-foot Trumpington room into the space of a mile—not only questions the expediency of such fabrications, but also, in comic irony, trivializes these clerkly “argumentes” in his snide remark to the Cambridge students. While it is certainly relevant to provide an intellectual context for Chaucer's poetry, his interest in the use of natural impossibilities as powerful tools for poetic imaginings and literary transformations certainly speaks for itself.

Chaucer's rhetorical skill in exploiting impossibility topoi brings our attention to the ways in which unnatural events (e.g., the sudden reversal of a river running backwards to its source) are imaginatively possible within the fictional world of poetry. As Elizabeth Allen puts it, “Criseyde's impossibility topoi draw a deeply ambiguous relationship between the impossible and the real, seeking a permanent place for love in a world whose changes lead her, repeatedly, to death and hellish punishment.”³⁸ The imagination of antinomy plays a key role in Chaucer's fictional test-case scenarios: hypothetical transformations (that otherwise violate traditional Aristotelian principles) provide a convenient setting for the manipulative alteration of spatial and temporal dimensions within the narrative, as well as Chaucer's own imaginative possibilities for meaning and deception. From the poet's sublunary anamorphoses emerge a critical attempt to reconstruct Chaucer's own developing awareness to phenomenology: what David Woodruff Smith defines as “the study of structures of consciousness as experienced from the first-person point of view.”³⁹

Chaucer's explicit presentations of sublunary transformations as natural impossibilities require a brief but no less crucial statement on the various kinds of natural “change” made possible according to established natural laws. Medieval conceptions of transformation can be broadly categorized under two major types of change: (1) the defining characteristics of a thing can instantaneously come into being or decay, known as substantial change (*mutatio*), or (2) it can undergo secondary changes of an accidental nature. The former occurs when a substantial form, the essential properties of a thing, experience *generatio* and *corruptio* (e.g., burning wood to make ashes), whereas the latter, broadly speaking, can be defined as “motion,” which deals with the accidental forms of a thing. Finally, this second category of change (i.e., the accidental sort), is also distinguished from substantial change in that it occurs “in time” and can be further subdivided into three more categories of change: (a) *alteratio* (changes of its quality, such as color) (b) *augmenatio* and *diminutio* (changes

of its size or quantity), and (c) *motus localis* (changes of position or place).⁴⁰ The purpose of my excursus on the medieval formulations of natural transformation is to relate both substantial change (*mutatio*) and accidental change (*alteratio*, *augmentatio* and *diminutio*, and *motus localis*) to the thematic content of individual poems. This book connects the conceptual ideas of fourteenth-century physics (the subject matter being sublunary transformation) with the aesthetic and narrative possibilities in Chaucer's poetry.

My heightened focus on physics and alchemy is partly motivated by A. C. Spearing's hunch that Chaucer's own interest in philosophy (e.g., ethics or moral philosophy) was secondary to his more fervent fascination with contemporary science and speculative natural philosophy.⁴¹ My own observation is that the immediacy of natural forces, as well as the primacy of Nature in human life, fuelled Chaucer's interest in natural philosophy. This is perhaps evident in John the carpenter's comment in the *Miller's Tale*:

So ferde another clerk with astromye;
 He walked in the feeldes for to pry
 Upon the sterres, what ther sholde bifalle,
 Til he was in a marle-pit yfalle.

(1.3457–60)

John refers to a medieval version of a cautionary tale inherited from Plato's *Theaetetus*. As noted by Jessica Rosenfeld, Plato's story of the philosopher Thales "serves as an example of a man who successfully disregards his body and the material world so that he may pursue the task of contemplation without distraction."⁴² Like all objects beneath the moon, the contemplative philosopher is nonetheless subject to natural forces, falling downwards toward his natural place in the center of the earth. John's observation here anticipates the way in which his own imaginative powers prompt his "literal and metaphorical downfall."⁴³ The clerk's unbridled passion for astronomy comically motivates his sudden drop into a marl pit, which also prefigures the hypogeal condition of the Cambridge scholars Aleyn and John of the *Reeve's Tale*—also wandering "in the feeldes" (specifically, the fens just south of Trumpington)—who chase their warden's horse until down "*in a dych* they caughte hym atte laste" (1.4106, emphasis mine). The fable of the distracted Greek philosopher—likely drawn from the *Liber de vita et moribus philosophorum* composed by the Merton master Walter Burley—is perhaps emblematic of Chaucer's frequent juxtapositions of the philosopher's sublime ascent among "the sterres" pitted against the realities

of the sublunary world and our participation in it (e.g., the practice of “marling” the earth for agricultural sustenance or John’s cutting down Oseney trees for timber). The lofty heights of “lerned art” (I.4122) and clerkly “argumentes” (I.4123) are comically mired (and literally soiled) by Chaucerian fabliaux. The popular tale of Thales functioned as “a witness to the fact that every mortal person is subjected to the obstinacy of the material world and of human desire; no one is above or immune to the natural world.”⁴⁴ Ultimately, human beings are trapped beneath the moon, excluded from the starry heavens in spite of the celestial influence on all things below. Chaucer, therefore, investigates the relationship between physical laws and lived experience, asking basic questions about contemporary natural philosophy and what it might say about human behavior.

Journal articles and at least a dozen books have addressed the topic of Chaucer’s scientific interests following publication in 1926 of Walter Clyde Curry’s *Chaucer and the Mediaeval Sciences*.⁴⁵ Although Joseph E. Grennen’s scholarly work in the 1960s first drew our attention to the significance of medieval alchemy, the predominance of critical studies on Chaucer’s scientific knowledge largely considers such topics as cosmology and optical science.⁴⁶ Chauncey Wood published *Chaucer and the Country of the Stars* in 1970, and the following decade witnessed a renewed interest in cosmology, culminating with J. D. North’s highly challenging and equally innovative *Chaucer’s Universe*. In recent years, Chaucer’s *Treatise on the Astrolabe* has also been recognized as more literary and sophisticated than was once thought.⁴⁷ What I have tried to avoid in this book are explicit discussions of Chaucer’s manifold references to astronomy and astrology, which have been well studied. However, this present study does indeed provide new readings of Chaucer’s astronomy, though rather incidentally, as planetary theory in the Middle Ages was seamlessly integrated into other scientific disciplines and recognizable knowledge systems. By way of example, chapter 2 discusses cosmology and the mechanics of planetary motion in relation to optical science, and chapters 3 and 4 incorporate ideas of astronomy in the context of alchemical theory and practice. Moreover, chapter 5 invites new ideas about cosmology in light of the fourteenth-century treatises on modal logic and the concept of “possible worlds.” The overlapping of cosmology, physics, astrology, and alchemy in medieval scientific texts attests to the fact that natural philosophy in the Middle Ages manifested itself as a highly *integrated* form of knowledge. Of course, medieval logic, as a practical instrument for the speculative sciences, was the thread interwoven into the fabric of these various knowledge systems.

Sublunary Change in Chaucer's Poetry: The Topicality of Motion, Alchemy, and Modal Logic

The physics of sublunary change appears throughout Chaucer's works. In chapter 2, we start by reconstructing the medieval view of natural philosophy with an analysis of the "accidental" sorts of transformation that appear in the *House of Fame*. In particular, the medieval fascination with *motus localis* (change of place) is an apt starting point for a discussion of accidental change, as medieval thinkers themselves often start a discussion of physics with an analysis of motion, repeating the famous tag-line: *ignorato motu ignoratur natura* (who knows not motion, knows not nature). In the context of Chaucer's *House of Fame*, we will investigate fundamental issues related to the narrator's factual observations of *motus localis*, the eagle's lecture on motion, the intension and remission of forms, the mechanics of the whirling House of Rumor, and the unique perceptions of motion according to the narrator's own structures of experience in terms of phenomenology. Chaucer's dream vision complicates the physics of movement by incorporating fourteenth-century ideas of *relative* motion, especially as it relates to uncertain knowledge. In the *House of Fame*, poetic imagination accomplishes in one artful dream what the terms of logic and science never communicate in full.

In chapter 3, we go further into the physics of sublunary transformation with a consideration of changing substantial forms. Specifically, the topic of substantial change brings us to the science of alchemy as a theory of matter. The discipline of alchemy in the Middle Ages is highly relevant to the physics of sublunary change, especially since "alchemy rested upon philosophical principles most clearly and authoritatively stated by Aristotle and developed by Scholastic Philosophers."⁴⁸ As early as 1150, Dominic Gundissalinus labels alchemy as a subcategory of *physica* in his *De divisione philosophiae*.⁴⁹ The fifteenth-century alchemist Thomas Norton even insisted that alchemy strictly required a prerequisite knowledge of physics and metaphysics.⁵⁰ Moreover, Constantine of Pisa, who composed the thirteenth-century *Liber secretorum alchimie*, seamlessly integrated the practice of alchemy within the category of *phisice* (physics): "Sequitur cui parti philosophie supponatur: phisice, que est naturalis scientia de omni uisibili re, maxime de omnium metallorum transformatione" (And now we come to the part of philosophy under which it is subsumed, namely, physics, which is the natural science of all visible things, especially the transformation of all metals).⁵¹ Unlike astrology, alchemy is not an outlier within the study of natural philosophy. Rather, belief in alchemical transmutation was ubiquitous throughout the Medieval Latin West. The reality of transmutation is even made patent in the famous passage on alchemy in the *Roman de la Rose*:⁵²

Car, coment qu'il aut des espieces,
 Au meins les singulieres pieces,
 En sensibles euvres soumises,
 Sont muables en tant de guises
 Qu'eus peuvent leur complexions
 Par diverses digestions
 Si changier entr'aus que cist changes
 Les met souz espieces estranges,
 E leur tost l'espiece prumiere.
 Ne veit l'en coment de fouchiere
 Font cil e cendre e veirre naistre
 Qui de veirrerie sont maistre,
 Par depuracion legiere?
 Si n'est pas li veirres fouchiere,
 Ne fouchiere ne rest pas veirres.
 E quant esparz vient e toneirres,
 Si repeut l'en sounvent voier
 Des vapeurs les pierres choier,
 Qui ne monterent mie pierres.

(for, however it goes with species, the individuals, at least, when they undergo intelligent operations, are changeable into many forms. They can so alter their appearances by various transformations that this change puts them into entirely different species and robs them of the original species. Do we not see how those who are masters of glass-blowing create from fern, by means of a simple process of purification, both ash and glass? And neither is the glass fern, nor does the fern remain glass. Again, when lightning and thunder come, one can see stones fall from the clouds, stones which did not ascend as stones.)

For Jean de Meun, the transmutation of baser metals into gold or silver is a less challenging undertaking in comparison to a glassmaker's task of transmuting ferns into ashes—its alkaline salts—followed by the chemical combination of fern ashes with silicates to make glass. Moreover, Nature's alchemy is responsible for the transformation of vapor into hail, which undoubtedly allows for the possibility of converting one metal into another. More importantly, Chaucer borrows from Jean this specific passage on alchemical transmutation in order to further enhance his catalogue of marvels in the *Squire's Tale* (v.253–7).

We need only peruse the *Canon's Yeoman's Tale*, however, to assess Chaucer's familiarity with alchemical theory and practice. By way of example, the poet's highly energized scene of an alchemical experiment gone awry testifies, I believe, to Chaucer's direct engagement with the

science. When a pot shatters, scattered fragments are flung violently about the alchemists' workshop:

They percen so, and thurgh the wal they goon.
 And somme of hem synken into the ground

 and somme are scatered al the floor aboute;
 Somme lepe into the roof.

(viii.911–15)

In fact, John Reidy's explanatory notes in the *Riverside* cite Duncan's argument that Chaucer is making a specific reference here to the chemical explosion caused by adding ground-up litharge and saltpeter to the mixture. That being so, evidence for Chaucer's technical, and possibly firsthand, understanding of alchemy also lies in the unexpected accuracy of detail used to describe the aftermath of the pot breaking. The occupational vignette that follows, remarkable for its originality, speaks of Chaucer's fascination with the actual *lived* experience of practicing alchemy. First, Chaucer enlivens the pot-breaking scene with the rapid-fire dialogue of bickering between four laboratory technicians, each of whom points a finger at one another for causing the violent explosion. The blame is cast variously on overheating, the insufficient mixing of reactants, the use of wrong materials (e.g., "By cause oure fir ne was nat maad of beech," viii.928), over blowing the fire, and so forth. The alchemist-lord is then convinced himself that the pot must have had a hairline crack on its surface before it was even subjected to the fire, thus causing it to eventually break into pieces. Putting an end to the usual backbiting, he instructs them, "As usage is, lat swepe the floor as swithe" (viii.936). Finally, we observe the extraordinary minuteness of detail that follows in Chaucer's description of the routine clean up:

The mullock on an heap ysweped was,
 And on the floor ycast a canevas,
 And al this mullok in a syve ythrowe
 And sifted, and ypiked many a throwe.

(viii.938–41)

This snapshot of four or five sooty alchemists all crawling on the floor, frantically scurrying for any missing pieces, is soon followed by a masterstroke of irony when one of the acolytes suddenly discovers a piece of precious metal found in the rubbish heap: "'Pardee,' quod oon, 'somwhat of oure metal / Yet is ther heere, though that we han nat al'" (viii.942–3). In simple terms, this careful presentation of the cleanup scene reframes

the alchemical workshop as an intimately domestic space, unexpectedly conveyed in the alchemist-lord's gentle commands (e.g., "As usage is, lat swepe the floor as swithe"). Despite the instability of matter and the violence of chemical process, alchemical practitioners still manage to domesticate their own world. Remarkable for its vivid realism, the cleanup scene (among many other such episodes in the *Canon's Yeoman's Tale*, a relatively understudied text) suggests that Chaucer's exposure to the science extends beyond any one single treatise on alchemy. Given that few medieval texts on alchemy have been edited, there is much work to be done. There is little evidence to support Pauline Aiken's argument that Chaucer *only* read Vincent of Beauvais's eighth book of the *Speculum naturale* for Pars I of the *Canon's Yeoman's Tale*.⁵³ Rather, I agree with Richard Firth Green's conviction that "the weight of detailed technical information in *The Canon's Yeoman's Tale* can only have been acquired by someone who felt a genuine intellectual curiosity about alchemy."⁵⁴

Indeed, Chaucer's deep-seated interest in alchemy appears elsewhere in the *Tales*. As will be argued, we make the case for alchemy as a transformative art in the *Franklin's Tale*. In Chaucer's version of a Breton *lai*, the narrator suggests both substantial and accidental forms of transformation as having taken place during the tale's main phenomenal event, the magician's *transmutation* of the black rocks. Here, Chaucer pushes to extremes allegorical and figurative meanings of alchemy. As Nicolette Zeeman puts forth in her insightful chapter on medieval allegory, "if allegory always works by juxtaposing unlike terms, religious allegory seems especially often to foreground the unlikeness and the possible discrepancies between the terms it brings together."⁵⁵ In the *Canon's Yeoman's Tale*, Chaucer's imbrication of sacred and secular alchemy, as well as the poet's exploitation of incongruous terms in his lexical fusion of *fine amor* with alchemical discourse, permits us to consider allegorical interpretations of alchemy in his other texts, especially ones that feature explicit alchemical terms at critical points in the narrative. This is especially relevant when considering the multiple internal transformations of character and the triple revelations at the conclusion to the *Franklin's Tale*. Like the *Canon's Yeoman's Tale*, Chaucer presents a bifurcated alchemy (i.e., "true," philosophical alchemy versus "false," material alchemy). Careful examination of the *Franklin's Tale* will illuminate the connection between the physicality of the rocks with spiritual alchemy, the alchemical quest for divine wisdom.

Chapter 4 follows this alchemical trend with a closer look at the process of inward *mutatio* in *Troilus and Criseyde*, especially in the context of the *Canon's Yeoman's Tale*. It is worthwhile to mention that Chaucer explicitly employs a richly complex alchemical metaphor in his comparison of

Troilus's tears to the condensation taking place in an alchemical alembic during the distillation of matter: "This Troilus in teris gan distille, / As licour out of a lambyc ful faste" (iv.519–20). Troilus himself experiences quantitative change (*diminutio*) with the condensation of tears. In this chapter, we examine the metaphor within the broader context of sublunary change and the instability of matter, an important theme in Chaucer's poem. Chaucer's alchemical metaphor in Book 4 of the *Troilus*, we shall find, is one of several instances where the poet-narrator consciously draws our attention to the register of alchemy in the context of the courtly love tradition. As will be argued, Chaucer's development of alchemy as a central motif problematizes the related subjects of love and mutability, and I intend to follow Chaucer's alchemical imagery through the poem. Once again, Chaucer combines the physics of alchemical change with a story's internal process of character transformations. The traditional metaphor of alchemical love, which encapsulates the reversible process of earthly love easily manipulated by an "alchemist," profoundly deepens the philosophical thrust of *Troilus*.

Finally, conceptions of "change" can be construed in terms of the transition from potential to actual modes of being. In chapter 5, we examine ideas of modal logic as it relates to love and mutability in the *Parliament of Fowls*. It is not surprising that the language of the *Parliament's* clerkly debate incorporates the medieval discipline of logic; one of Chaucer's *dramatis personae* of the *Canterbury Tales* includes "A Clerk ther was of Oxenford also, / That unto logyk hadde longe ygo" (I.285–6). I argue that Chaucer's university-trained audience might have read his text as a mock-"obligational" debate: a formal academic examination of imagined possibilities within the rigid structure of a debate. These so-called *obligationes* were an essential part of the university curriculum, as exercises in logic and were practiced by virtually all university students. It is highly significant that Chaucer's close friend Ralph Strode wrote a widely used textbook on the rules and principles pertaining to these obligational debates. In the *Parliament*, Chaucer explores the tautology of modal logic in a significant and inventive way: he employs the modal terms of "obligational disputation" and the language of logical possibility (*possibilitas logica*). In other words, Chaucer exploits the medieval *obligationes* as a useful tool for exploring the unexpected relatedness between the so-called falsity of poetical art and the counterfactual reasoning of obligations-logic. Chaucer shows a fascination with the implications of a particular modal construction—that is, Nature's "condicioun" (407) for the avian debate: Nature begins the disputation with a conditional necessity, which is in fact a *counterfactual* conditional, unique to the obligational debates

that occurred in Chaucer's day. After the debate's conclusion, Nature insists that the temporal present dictates that "it may non otherwise betyde" (654), reiterating the well-known Aristotelian thesis that at any given temporal instant, *Omne quod est, quando est, est necessarium* (everything necessarily is when it is). However, the formel's resolve not to choose a male suitor in the instantaneous present of the debate not only complicates Aristotle's necessity principle, but also reinforces the fourteenth-century notion of synchronic alternativeness. As we shall see, Chaucer's *Parliament* probes the ontology of simultaneous possibilities before imagined alternatives are actualized in the real world of decision making. In the end, Chaucer's presentation of an academic debate in the dream advances poetic imagination as an alternative to sublunary transformation in the form of an obligational debate.

The discipline of physics in the Middle Ages is important to our understanding of Chaucer's poetry, especially in regards to phenomenal events of sublunary change—that is, the alteration of qualities and the transformation of substance. A discussion of physics encompasses a detailed study of motion, time, space, alchemy, and medieval theories of matter (topics that will be covered in the following chapters). Modality serves to enlarge this medieval worldview with imagined *counterfactual* possibilities for change. Furthermore, the science of medieval physics—an elaborate system of thought for rationalizing the apparent transmutations of substance—is highly prone to what we might call "metaphysical" considerations. The aims of this project, however, are not solely focused on the history of ideas. Rather, the following pages will explore the ways in which medieval theories of matter and the physics of change inform Chaucer's thematic interest in the consequences of earthly mutability, despite the supposed unity of all corporeal substance. The reality of change poses challenges to a philosophical poet contemplating the natural world. To my knowledge, medieval physics has been largely excluded from previous studies that focus on Chaucer's representations of sublunary change, which are typically restricted to ideas of astrology and the imagery of Fortune's Wheel. That is to say, critics generally limit Chaucer's interest in material change to a Boethian preoccupation with the vicissitudes of Fortune. Chaucer, I think, recreates the sublunary world in his poetic imagination as a kind of thought experiment, which puts to test medieval theories of natural philosophy. Chaucer's "philosophy of change," however, develops throughout his artistic career and contributes to his poetry in significant ways. Indeed, it is not surprising that Chaucer's contemporary, the poet Thomas Hoccleve, famously identifies him as the "universel fadir in science."⁵⁶

CHAPTER 2

THOUGHT EXPERIMENTS IN GEFFREY'S DREAM: THE POETICS OF *MOTUS LOCALIS*, MEASUREMENT, AND RELATIVITY IN THE *HOUSE OF FAME*

Chaucer's *House of Fame* is a spectacular showcase of wonders and wonderment. This is established at the very outset of the poem when Geoffrey, the narrator, is first struck with "wonder" as to the causes of dreams: "God turne us every drem to goode! / For hyt is wonder, be the roode" (1–2). In his first encounter with the eagle, the narrator "gan beholde more and more / To se the beaute and the wonder" (532–3); *more and more* these wonders stack up, and, by the poem's ending, the narrator will have repeated "wonder" 26 times. Significantly, these wonders are intimately connected to seeing and experiencing *motion*—literally, the narrator sees "Wynged wondres faste fleen" (2118). Chaucer shows more than mere belletristic interest in movement, however—the conceptual idea of motion is very much a thematic and philosophical interest for Chaucer in writing the poem. Indeed, the poem encompasses a protracted lecture on the topic of "motion" itself.¹ Although the eagle's prolixity is admittedly comic, it is not merely fortuitous that his discussion on "change of place" (*motus localis*) is at the center of action in the poem (i.e., in the middle of Book 2). Rather, his long lecture on motion seems to define the developing logic and *sine qua non* of the poem's action—the driving energies of mind and matter. Chaucer's deep-seated interest in the sublunar realm of mutability (literally, "in erthe under the mone," 1531) inevitably considers motion (change of place) as a subcategory of "accidental" change.

As we shall see, the *House of Fame* is in part Chaucer's own poetic version of a fourteenth-century thought experiment that deals with quantitative

and qualitative change, where the possibilities of physical phenomena are pushed to extremes. Needless to say, dream literature provides the template for a process *secundum imaginationem* (literally, “according to the imagination”) of a thought experiment.² Using this medieval technology of abstraction, the results gathered from Chaucer’s experiment provide the reader with reflections on our *locus* in the universe. My focus here is, therefore, to address the *House of Fame* as a product of fourteenth-century academic debates on the science of mechanics at a critical moment of scientific thinking at Oxford, Cambridge, and Paris.

Chaucer’s debt to optical writings in medieval science has been exhaustively studied, and the influence of spatial concepts on Chaucer’s narratives has recently emerged as a topic of interest among scholars (see chapter 1). Indeed, optics (or *perspectiva*) had a broad reach and infiltrated many disciplines. There has, however, been little consideration of the link between the medieval science of physics and perceptual experience.³ Within the dream-framework, the narrative formula “thoo saugh I” (1497) constructs a mental space in the topography of the vision, and the poet accomplishes this with a specific, recognizable, first-person point of view. What is more, Chaucer’s special emphasis on the problematics of *perceiving* motion bears an authorial signature. From the standpoint of the fixed gaze, the mind’s eye naturally attributes newly energized motions to something that is outside itself—that is, to the object(s) it sees. Or, we might argue, these motive energies ultimately germinate from within—that is, by way of the reflecting self. This is further complicated when the viewer claims to “take” wonder from the object directly (e.g., “hath of hit wonder,” 1682, emphasis mine). “Wonder,” therefore, problematizes the very concept of motion, especially when the perceiving narrator actively *abstracts* the motion. Likewise, the critical reader of Chaucer’s poem is given the hermeneutical task of defining the motion by applying interpretative meaning to it. Gazing at the narrative images in the temple of Venus, it does indeed become increasingly difficult for Geoffrey and his audience to distinguish between what in fact moves, and what remains stationary.

As will be argued in this chapter, Chaucer inherits from Macrobius (among others) the knowledge of closed mechanical systems and the idea that motion is uniquely measured (or approximated) from a person’s own structures of experience. With this framework in mind, Chaucer develops the Boethian theme of relative perception in the cosmos. Following the invocation of Apollo, “O God of science” (1091), the final scene in the House of Rumor reasserts the medieval dialectic of the relativity of motion to the perception of the observer and argues for the possibility of Earth’s daily rotation on its axis. Chaucer’s thought experiment, I will

argue, utilizes a closed mechanical system to dispute the acceptance of a stationary Earth and thus probes the then controversial theory of diurnal rotation. Moreover, these phenomenal events of motion function as visible signposts for the unfolding *literary* transformations of Geoffrey's character. In short, Chaucer uses the topic of "motion" to explore human psychology and imagination. Despite the narrator's own perceptions of dimensional alteration, the science of mechanics nonetheless informs his evolving commentary on the limited possibilities for seeing and knowing "by experience" (878).

The Eagle's Lecture

The *House of Fame* is perhaps Chaucer's most enigmatic piece. The poem's apparent lack of a main subject is certainly problematic, and has produced a wide range of scholarship. There is a tinge of self-irony among critics who acknowledge the poem's variety of critical interpretations that serve as reinforcement of Chaucer's own interests in multiplicity of meaning (e.g., the Proem's slew of theories on the causes of dreams and the manifold interpretations of the *Aeneid*). However, this chapter is not an outright attempt to weave a fabric of unity for the poem as a whole, but does offer a philosophical formula for the poem's action, which has its source in the avian lecture. Unfortunately, critics have a long history of hurriedly glossing over this tedious lecture, perhaps as impatient as is the narrator to arrive at Fame's court. At first glance, the passage seems to reflect a medieval fascination with scientific speculation, a fascination equally apparent in Jean de Meun and Dante. Beyond this, the eagle's diatribe concerning sound and fame is often viewed as a convenient setting for the poet's brilliant use of irony, a critique of medieval scholasticism, or merely as a scientific, and necessarily encyclopedic, explanation of Fame's complex operations. In the prophetic words of the eagle, the critics variously "Take yt [the lecture] in earnest or in game" (822). I propose to take it seriously. While the first part of the eagle's speech is essentially made up of intellectual commonplaces, I shall show that the second part of the speech brings new considerations to the scientific issues that emerged among intellectuals of the fourteenth century.

It is, of course, first necessary to examine the possible source material that Chaucer borrows for this avian lecture. John M. Fyler's explanatory notes in the *Riverside Chaucer* mention Dante's *Paradiso* (1.103–41) and *Boece* (III.11.95–187). Dante refers to the natural inclinations of inanimate objects and their corollaries, the natural instincts of all living creatures, such as man's desire for the apparent good (1.133–5), though these objects, he admits, can sometimes rebel and move away from their natural

place (1.127–38). In the *Consolatio*, Boethius, in the voice of Philosophy, refers to the natural forces that dictate the locations of Nature's herbs and trees. These parallels are certainly pertinent but are also tedious, since these texts make reference to commonplace medieval ideas. The doctrine of natural place has been rephrased in a plethora of works, which includes (among many others) Augustine's *Confessions*, Chalcidius's version of Plato's *Timaeus*, and Aristotle's *On the Heavens*. In other words, it becomes virtually impossible to locate Chaucer's most proximate source for the scientific discussion on natural place because "there were literally scores of potential sources he might have used."⁴ Still, Chaucer departs from Boethius and Dante by uniquely relating natural place doctrine to sound theory, as well as by considering the topic of "motion" itself.

In the context of sound law, Wilbur Owen Sypherd points out several relevant passages from Vincent of Beauvais's *Speculum naturale*, from Boethius's *De musica*, and from Macrobius's commentary on the dream of *Scipio*. Sypherd rightly concludes, "No marked exclusive resemblances appear between Chaucer's words and those either of Vincent or Macrobius."⁵ Another possible source is Vitruvius's *De architectura*, which J. W. Bennett finds recited again by Adelard of Bath and St Thomas in the thirteenth century.⁶ It is also worth mentioning that there are no specific *literary* precedents for the poet's interest in sound law. Martin Irvine's analysis of medieval grammatical theory compares the eagle's lecture to the commentaries on Priscian's *Institutiones grammaticae* 1, *De voce*. Irvine admits, however, that "some of the material in the grammatical sources is common to a range of related disciplines."⁷ In short, "we are dealing with what, as Chaucer suggests, were commonplaces, at least within the schools,"⁸ and this feature of the work is fully recognized when the eagle informs us that his lecture is indebted to "Aristotle and daun Platon, / And other clerkys *many oon*" (759–60, emphasis mine).

However, the critical effort to locate an exact source for the eagle's theory of sound sometimes fails to take into account the obvious fact that the eagle's lecture in many ways speaks for itself. What seems to be at issue in the first half of the lecture is Aristotle's doctrine of natural place and the medieval principles of motion. *Motus localis* is one classification under Aristotle's four basic types of change. Under this particular category (i.e., change of *place*), two kinds of motion are possible. *Violent motion*, also known as *unnatural motion*, occurs when an object is moved in a direction away from natural place. *Natural motion* is the motion in the direction of an object's natural place. On the one hand, Aristotle postulated that a heavy body of terrestrial element, the eagle's "thyng of wighte" (739), falls to the center of the earth, which coincides with the geometric center of the universe. On the other hand, light bodies,

“thynges lyghte” (743), rise to the lunar sphere (i.e., the natural place in the spheres of water, air, or fire). This law governs how “fyssh duellynge in flood and see, / And treës eke in erthe bee” (751–2). Moreover, this law, comically, has the effect of making Geoffrey “noyous for to carye” (574). The eagle then summarizes the first half of his speech:

That every kyndely thyng that is
 Hath a kyndely stede ther he
 May best in hyt conserved be;
 Unto which place every thyng
 Thorgh his kyndely enclynynge
 Moveth for to come to
 Whan that hyt is away therfro.

(730–6)

Embedded in his “worthy demonstracion” (727) is the Aristotelian premise that the noblest state is rest, where objects “May best in hyt conserved be”: *natural motion* seeks rest at the center of gravity.

It is worth noting, however, that Aristotle’s doctrine of natural place was problematic in the Middle Ages, despite the eagle’s efforts to paraphrase it in a few succinct lines. In theory, we can expect from Aristotle’s model the total submersion of Earth in a circle of water: water is lighter than earth (the heavier element) and is therefore expected to reside completely above Earth’s crust. But this is clearly not the case. Why, therefore, does the heavier element earth protrude above water? It is precisely this scientific query that Dante tackles in his own text on motion and earth science, the *De situ et forma aque et terre*, an address delivered at Verona in 1320, which relates two elements, water and earth, to his theory of motion.⁹ For Dante, the motions of earth (the heaviest element and closest to the world’s center) and water (the lighter element) are—together—directed toward the *causa finalis*: “the earth’s striving to achieve perfect sphericity, eventual submersion of the dry land.”¹⁰ In the end, Dante employs complex notions of celestial influence to support his own theory for the seemingly *unnatural* motions of the two elements, attempting to rationalize the inexplicable protuberance of dry land above water. It is likely that Chaucer drew from Dante for conceptual ideas about natural place, though similar considerations appear in Macrobius’s commentary and in the writings of later philosophers as diverse as Gregory of St Victor, Jean Buridan, and Ristoro d’Arezzo. Even so, these ideas were disseminated widely from Aristotle’s *Physics*, a standard textbook that virtually all beginning arts students were required to learn before advancing to higher degrees. William F. Woods adds, “In a larger sense, the

physi

motu neq; n. no est alius
 motu. ¶ Quid duo motu
 ler aut uti motu dunt i
 alio opit ut p p m m
 erguio er ali motu
 lo g m d i e t m o t u t p e . a n g
 lo g i u m f i l e n i a ; i n m e n t u
 ¶ S i c p m u t i a n e t a m u
 u g i t u r a d a m b . n . e s t . i .
 . a n g e l . a d a n t e q ; a n g e l u
 i n q u e a n t e q ; c a s t r u m .
 a l i q d q ; a n g e r . a d a n t a u
 g r e . e a s t r u m q u o d . e a s a g e
 a n g e l e . S i t a d c a s t r u m f i
 m a g i s c o m m u n i s i t e n t a f r
 e m a g i s t e m p o r e . ¶ F i n d
 u p l o d u p l i u m a d u p l u m
 m o d u l o . O m n i u a n t i n
 m o d u t p e . a n t i m m e d i o
 m o d u m . a n t m o t u d u p l
 u m . ¶ S i a n t a l i u m a n t
 a n g e l e m m o t u m a n t a n g e
 r a n t a l i e r n o n e s t e s t e m e
 d i u m i m m o r e c o m m e d i u .
 S i n h i c o n t r i g i t a n t i n a n
 g i n e n t u r . a n t a b i r . n e
 c r i t a n t u .



motu alie quere crith
 r ubus que sunt ur una
 quodam em nli dly stly
 stentib; ¶ Est quid em
 q motum q affirmat d
 nli aliq d i a c t e r . i p s i q m
 s i d e m f i c i u r . a d g i t e r a
 c o m p r i a t e s s e s t i d e m o i
 b u s i p s i . q m u t e e s t . o c i m .
 n l i e m o r . ¶ S i p r i q u o d
 m i t u o r . m n d i d i c i t e s
 e q u o d a m q u o d f i . q u o d a
 n t c o m p i m a d u t i p d i c i t
 e e m m o t u m . n a t i m . n . i
 g i o m u s c o m p r i o n e s c o m
 m o r i e e m i d e r . ¶ E t c i u
 a n t m u c a n o e e m i p c a d
 m o r i i p p o r t i s i r o m e m .
 ¶ S i c o n t r i g i t a n t i m e s t
 m o t u d u p l i n a t e e s t i s . a c c
 i d . a n t . n . h i e a n a y d i c i t .
 i n q u o d . n . u l e h i s d i b ; e r i t u
 b ; a n t i c i t a t i b ; m i n i m o r e
 r e p a c m o t u m f i c i t m e s t
 r i m c o n t r i g r e g a t e . ¶ S i c
 h i e e m p r e m p r e m o t u e i
 t i n q u o t e t . a u t i q u o d e u
 a n t a r i a e r i t u s f i c i a t n
 m . a n t d i s t o r t u i n t e r
 e r u n o . ¶ E t e s t a n t i m m e d i u
 r e m p u b i . ¶ D i c i t h e m
 p r e m q u o d e x p l i u m u n a ;
 d i c i t n a t e i . m a g i s t r u m i t e h
 e r i m o g e n e r i d e p l i m a p
 f i a n t . S i c f u i t u t q e n i l l o
 m o i p u s e s t s e l u m u n i
 h e a n t p u n t a t u r . n ; s i l p
 f i c i t a n t . S i c a n t t p s i m e
 i m m o b i l e s s e d c e n t r a l i u m .

Figure 2.1 Decorated initial from Aristotle's *Physica* (Italy, fourteenth century). British Library MS Harley 6331, fol. 44r. Joseph E. Grennen argues that Walter Burley's commentary on the *Physics* is a direct source for the *House of Fame* (see note 22).

copying and circulation of manuscripts and the travel of masters between universities made Aristotelian thought a fairly homogeneous intellectual tradition in western Europe.”¹¹

When the eagle ends the first half of his “demonstracioun,” he concludes an analysis of motion that is straightforwardly Aristotelian. After the eagle summarizes natural place theory and the basic principles of mechanics inherited from antiquity—“Of every philosophres mouth” (758)—he informs the narrator that he will “confirme my resoun” (761).

The next section of this chapter concerns the second half of his speech, which introduces additional contemporary ideas pertaining to the science of mechanics. As we shall see, the eagle imitates the new conceptual languages that developed in the fourteenth century in order to describe the additive process of spatial increase via incremental degrees (*gradus*), a notion indeed repeated by “other clerkys many oon.” In fact, the eagle will offer a few noteworthy contributions of his own, such as his observation of subaqueous waves.¹² But more to the point, this latter half of the lecture will introduce the so-called “intensio et remissio” (intension and remission) of forms—the process of increasing/decreasing a quality (e.g., heat or motion) by degrees—and Chaucer will apply this newly emerging science to a wide range of thematic elements, including fame, orality, motion, and mutability.

“Kinematics”: The Intension and Remission of Forms

In the early fourteenth century, a group of philosophers and mathematicians at Merton College, Oxford, revolutionized medieval science. Within the span of a few short years, the results of the Merton efforts were rapidly disseminated throughout France, Italy, and other parts of Europe. In the 1360s in Prague, John of Holland dubbed these famous Oxford logicians the *calculatores* (Calculators).¹³ These highly influential English Masters included Thomas Bradwardine, William Heytesbury, Richard Swineshead, and John Dumbleton. The most important figure at Merton was Bradwardine, who initiated discussion in 1328 after writing his influential *Tractatus de proportionibus* (On the Ratios). At Merton, academic discussions on the science of mechanics willfully evolved into two separate camps of methodology: (1) “kinematics” (*quo ad effectum*) concerned the effects of motion both in real time and in space and (2) “dynamics” (*quo ad causam*) involved forces of the surrounding medium acting on the object (i.e., causing a change in motion). This section of chapter 2 first deals with the “kinematics” of motion in the poem, whereas the next section will then consider Chaucer’s handling of medieval “dynamics.” In fact, the medieval treatment of kinematics and dynamics as distinct yet equally valid approaches to the study of motion was an important development in the study of mechanics. Finally, the Oxford Calculators laid the groundwork for more philosophical discussions surrounding the degrees of variation in a quality: the intension and remission of a form, such as “motion.” As J. W. Bennett aptly points out, Chaucer “could hardly have made that poetical survey of the starry regions and the laws of sound but for the impetus given by the Merton school.”¹⁴ Similarly, Robert Epstein confirms, “Chaucer was deeply familiar with contemporary Oxford—as

an institution, as a cultural force, as a repository of knowledge, and as a geographical location—and he had personal and intellectual associations specifically with Merton College.”¹⁵

Although Chaucer may have learned about the Oxford developments from any number of important academics, a “newly appearing measure-mania” in the fourteenth century led to the widespread development of so-called “measure languages.” John E. Murdoch’s seminal essay on these mathematical and logical languages of analysis—with their unique lexicon and set of rules—explains in detail how these languages “ascribe limits to one or another entity, process, or event.”¹⁶ This contemporary scientific trend established what appear to be concrete, precise methods for analyzing abstract, conceptual ideas (for instance, motion). Throughout the *House of Fame*, both the eagle and the dreamer betray “a real delight in noting and measuring,”¹⁷ and this interest, I argue, imitates the “measure languages,” the eagle’s “hard language and hard matere” (861), that first emerged in classical antiquity and then flourished in academic debates on motion at Oxford, Cambridge, and Paris. As we shall see later, this particular kind of academic language is not uncommon in Chaucer, as demonstrated so well by Glending Olson in “Measuring the Immeasurable”: he argues that the *Summoner’s Tale* “invite[s] reflection on efforts to measure or quantify abstract theological concerns” (414), rather than physical mass and force.¹⁸

Given that the medieval science of physics is less familiar to modern readers of Chaucer, a detailed account of fourteenth-century notions regarding qualitative and quantitative change will be beneficial to my analysis of the poem’s language of “measurement.” First, it is necessary to trace some of the developments that led to the popularity of this dialectic on the intension and remission of forms, the most widely used of the measure languages. Beginning in antiquity, Aristotle, in his *Categories*, argued that abstract qualities (e.g., justice or virtue) remained constant. Variation in some quality was therefore a result of our participation in that particular quality. Thomas Aquinas further developed this Aristotelian idea into what is known as the “doctrine of participation.” Peter Lombard, in his *Sentences*, applies the doctrine of participation to the apparent variations of the Holy Spirit in the human soul. He argues that grace remains constant (i.e., the Holy Spirit cannot change), but a variation in degrees *does* occur by virtue of human participation in that particular quality (the Holy Spirit).¹⁹

It appears that a major philosophical shift occurs in the early fourteenth century. The doctrine of participation was superseded by the theory that “the quality itself, not the degree of participation, was taken as the variable.”²⁰ This new scientific interest in examining a change

in the quality itself perhaps led to the increased emphasis on the intermittent “degrees” and “latitudes of alteration” in a form: philosophers considered *every* point along a quality’s path of variation (as opposed to looking at only starting and finishing points). First proposed by Godfrey of Fontaines (d. after 1303) and later developed by Walter Burley (ca. 1275–1344), “alteration is explained as the result of a subject’s taking on a continuous series of forms of varying degrees, each form being corrupted as the next form is introduced” (i.e., the “succession of forms” theory).²¹ In fact, Walter Burley’s commentary on the *Physics* has even been argued as a plausible source for the *House of Fame*.²² In a slightly modified version of Burley’s theory, the new “addition” theory of qualitative intensification—advanced by Duns Scotus (ca. 1265–1308), who lectured at Oxford and at Cambridge—states that when a new degree was added to the older degree, the quality intensified as these forms combined, thus making a higher degree. The difference here from the “succession of forms” theory is that “a quality becomes more intense by the addition of a new part of form (just as a body of water is made greater by the addition of a new drop).”²³ According to the medieval “addition” theory, an object became whiter “not by exchanging its existing form of whiteness for an entirely new form of a higher degree or intensity but by an addition of whiteness to the existing form, resulting in a higher degree of whiteness.”²⁴ John Murdoch and Edith Sylla clarify, “Thus, degrees, like latitudes, came to be imagined as lines, rather than points, and higher degrees contain lower degrees, just as longer lines contain shorter ones.”²⁵ The effect, then, is the “intensification of forms.”

This “addition” theory of qualitative change strongly influenced the Oxford Calculators and contributed to a fundamental breakthrough that emerged in the dialogue at Merton: the identification of “speed” as an independent magnitude in its own right. *Motus localis* was then analyzed mathematically, whereby velocity increased or decreased by degrees of intensity. Historians have drawn attention to the shift from the classical identification of velocity with space to the late medieval focus “on measuring the change or motion itself.”²⁶ The Oxford philosophers, such as Swineshead, analyzed velocity as an instantaneous velocity (*velocitas instantanea*) irrespective of a particular measurement in time, which anticipated the Newtonian definition of instantaneous velocity as the limit of a ratio. As we can see, the notion of “instantaneous velocity” developed a vocabulary at Merton centered on the degrees of motion (*gradus velocitatis*). The culmination of these developments also led to the groundbreaking Merton theorem of uniform acceleration, which is “probably the most outstanding single medieval contribution to the history of physics.”²⁷

The Merton schoolman William Heytesbury (fl. 1350) states the theorem in his *Rules for Solving Sophisms*:

sic scilicet quod mobile illud, ipsam uniformiter acquirens seu deperdens in aliquo tempore dato, equalem omnino magnitudinem pertransibit sicut si ipsum per equale tempus continue moveretur medio gradu illius

Thus the moving body, acquiring or losing this latitude [of velocity] uniformly [i.e., constant acceleration/deceleration] during some assigned period of time, will traverse a distance exactly equal to what it would traverse in an equal period of time if it were moved uniformly at its mean degree [of velocity].²⁸

Also known as the “mean speed theorem,” it essentially describes the free fall of bodies and deserves much of the credit nowadays misattributed to Galileo.

This brief excursus into fourteenth-century mechanics not only contextualizes but also *explains* the eagle’s lecture on motion. As will become clear, Chaucer’s special emphasis on the progression of a quality’s motion at every point along the way to its natural place reflects the fourteenth-century academic trend concerning the degrees of intension and remission, a recursive phenomenon we see in the *House of Fame*. In fact, it has been argued that the topic of intension and remission appears elsewhere in Chaucer’s poetry—that is, in Jankin’s solution to Thomas’s fart-problem in the *Summoner’s Tale*, which has been shown in previous studies to be related to the iconography of Pentecost. The fart, divided into twelve equal parts, is then analyzed academically “and evere it wasteth litel and litel away” (III.2235). In a recent paper on the *Summoner’s Tale*, Glending Olson argues that

In medieval terms, Thomas’s problem entails a question not just about dividing a continuous quantity but also about the *intension and remission of forms* [my italics], what writers referred to as uniform or difform difformity . . . the fourteenth-century fashion of importing mathematical measurement and geometrical demonstration into discussions of both physical and metaphysical realities.²⁹

In the *House of Fame*, I argue that these “measure languages” provide a conceptual framework for the eagle’s lecture on motion and the poem as a whole, especially as it relates to the fourteenth-century interest in the *gradual* process involved in a form’s intension or remission. Against this backdrop, the avian lecture gives special attention to the “middle path” (as opposed to merely the terminal points) of a motion’s intensification: for example, “*That whel wol cause another whel / And that the thridde,*

and so forth, brother" (794–5, emphasis mine). Broadly speaking, the eagle delights in describing the successive degrees of a circle's "multiplyinge ever moo" (801). The circle incorporates the previous form as the circumference becomes "Wydder than hymselfe was" (797), a process of higher circles containing lower circles "Ech aboute other goynge / Causeth of othres sterynge" (799–800). The quality (i.e., the circle's area and circumference) intensifies as the form increases by degrees. As a corollary to the "addition" theory of aqueous waves, the process of qualitative intensification is also analogous to speech:

Moveth *first* an ayr aboute,
 And of thys movynge, out of doute,
Another ayr anoon ys meved

Everych ayr *another* stereth
 More and more, and speche up bereth.

(811–18, emphasis mine)

Strikingly, the fourteenth-century philosopher John Buridan uses the *same* lexicon of *intensio motus* when summarizing and refuting Aristotle's idea of a projectile's motion by air in his *Questions of the Eight Books of the Physics*:

aer coniunctus proicienti movetur a proiciente et ille motus movet *alium sibi* proximum et *ille alium* usque ad certam distantiam. *Primus* ergo aer movet proiectum in secundum aerem et *secundus* in *tertium* et *sic deinceps*...ideo etiam dicit quod non est motus continuus *sed consequenter entium aut tangentium*.

(the air joined to the projector is moved by the projector and that air having been moved moves *another part* of the air *next to it*, and that [part] *moves another* [i.e., the next] up to a certain distance. Hence the *first* air moves the projectile into the *second* air, and the *second* [air moves it] into the *third* air, and *so on*. . . . Hence he [Aristotle] also concludes that the movement is not continuous but consists of *succeeding or contiguous entities*).³⁰

Like Buridan's succession of different movers—that is to say, the precise language of "another part . . . another . . . the first air . . . the second . . . the third"—Chaucer's eagle also describes such degrees of intensification: "first an ayr . . . another ayr . . . another stereth" and "That whel . . . another whel . . . the third," and so forth. Not only does Chaucer here imitate the fourteenth-century fashion of introducing the language of intension and remission into various abstract qualities, but the poet will also use this

jargon himself in his treatment of fame, love, orality, and literary transmission. At first glance, this connection might seem unlikely, though it is not unfounded, as medieval authors frequently borrowed the language of intension and remission, applying it liberally to a wide range of topics. In other words, Chaucer comically applies this language to the most abstract qualities in the same way medieval authors applied it to grammar, human psychology, and theology.

Chaucer imitates the new conceptual language of intension and remission in the *House of Fame* to support, albeit in self-irony, his overarching theme of earthly mutability. Specifically, the dreamer describes the process of *gradus motus*—the poem’s recurring pattern of “more and more”—in the transmission of tidings in the House of Rumor. Like Buridan’s example of movement by air, a story’s motion (measured in furlongs) expands over space via a series of “succeeding or contiguous” tidings (i.e., broken air), which embellishes the subject—whether true or false. The effect, then, is a story’s “intensification” *more than it ever was*:

Whan oon had herd a thing, ywis,
 He com forth ryght to another wight,
 And gan him tellen anon-ryght
 The same that to him was told,
 Or hyt a furlong way was old,
 But gan somewhat for to eche
 To this tydyng in this speche
 More than hit ever was.
 And nat so sone departed nas
 Tho fro him, that he ne mette
 With the thridde; and or he lette
 Any stounde, he told him als;
 Were the tydyng soth or fals,
 Yit wolde he telle hyt natheles
 And evermo with more ences
 Than yt was erst. Thus north and south
 Wente every tydyng fro mouth to mouth,
 And that encresing ever moo

 And woxen more on every tonge
 Than ever hit was, [hit] wente anoon
 Up to a wyndowe out to goon

 And flygh forth faste for the nones

Here, Chaucer comically applies the “addition” theory of qualitative intensification to the development of oral narrative. This “wondermost” (2059) process involves the story’s intensification: “gan somewhat for to eche / To this tydyng in this speche / More than hit ever was,” with higher degrees (of tidings) containing lower degrees. In other words, oral narrative gets distorted by degrees of intensity: “oon had herd a thing . . . com forth ryght to *another* wight . . . And nat so sone departed nas / Tho fro him, that he ne mette / With the *thridde*” (my italics), and each degree corrupts the previous form as the next one is introduced, being distorted “evermo with more encres / Than yt was erst.” This is reminiscent of the eagle’s description of sound waves, with “every sercle causynge other / Wydder than hymselfe was,” adding a new and higher degree at the first, second, and “the thridde [degree], and so forth” (795).

It is not unlikely that Chaucer here imitates the application of *intensio et remissio motus* and the degrees of intensification to medieval grammatical theory. But the joke is not only a grammatical one, *pace* Martin Irvine, for the mathematical vocabulary at Merton was taken up “also within [other] disputations that had originally been primarily logical and grammatical.”³¹ The vocabulary of *gradus motus* was used to analyze problems that included the variations in free will, *caritas*, the motions of angels, sin, justice, logic, the Eucharist, virtue, the eternity of the world, God’s power and presence, and grammatical theory. The poem’s focus on the mutability of a substance or form *itself* (e.g., water or air)—where abstract qualities are *not* constant, but variable—perhaps expresses anxiety about the fourteenth-century intellectual movement away from human participation as the variable of alteration. In other words, variations in intensity occur in the abstract quality itself, regardless of any human participation in variability. This begs the question, *is human freedom, then, subject to the mechanics of natural forces?* Not quite. As I shall be saying more about later, the science of motion was also used by medieval theologians to discuss the “physics” of free choice: it was said that the human will functioned like Aristotle’s physical “resistance” (e.g., a resisting medium like air or water), which then competed with the “forces” exerted by the passions or appetites. But unlike natural forces in Aristotle’s plenum of physical objects, “humans, with free will (*voluntas, liberum arbitrium*), may apply a greater or lesser power at will.”³² As we shall see, the real problem lies in the relative and varying *perceptions* among human beings.

It was the intension and remission of language that interested Chaucer most, for language reasserts the centrality of human participation, where each “wight” can augment the story, such as the case with the story of Dido. Each successive generation of poets, represented by pillars in Fame’s Castle, “participates” in the abstract quality of poetic fiction. But

historical truth is inevitably subject to the distorting power of qualitative intensification. Language increasingly becomes less truth telling, as the addition of one qualitative part to another augments the intensity “from mouth to mouth.” However, the quality *itself* then begins to exert control and influence a story’s outcome, even to a point that one believes “Omer made lyes” (1477). It is possible that Chaucer imitates the medieval theologians and philosophers who, applying the science of qualitative intensification, attempt in vain to measure by degrees an infinitely intense abstract quality. This is especially pertinent to Chaucer’s most experimental poem, which probes the consequences of earthly mutability and the alteration of forms.

“Dynamics”: Axiom of Movers or *Autokinetos*?

Now we turn our discussion to Chaucer’s literary interest in the “dynamics” of motion, that is to say, the *quo ad causam* of mechanics. Aristotle’s fundamental premise, which begins Book 7 of the *Physics*, is the axiom that any object in motion is moved by something else: *Omne quod movetur ab alio movetur* (Whatever is moved is moved by another).³³ In addition, local motion demanded that the object remain in constant substantial contact with the mover (i.e., a force or resistance). Stated simply, Aristotle concluded that the mover does not move itself, and the existence of another conjoined mover (*motor conjunctus*) was a requirement for a body to remain in constant motion. Of course, the axiom proved problematic for medieval scholastics since this principle was contrary to common experience: for example, we might consider the fall or rise of heavy/light bodies, the motion of projectiles, and the perpetual motion of the planets. Macrobius, in his commentary on Cicero’s *Somnium scipionis*, is equally perplexed as to the source of force for the movement of heavy and light bodies: “even these, it must be admitted, are moved by something outside, although it is uncertain what force is operating. Reason affirms that there is something, I know not what, that moves these bodies.”³⁴ If there is no continuing presence of a motor, then what moves these substances? Of course, there were many problems with Aristotle’s theory of *antiperistasis*: in Aristotle’s argument, a stone that is thrown moves the air, and the air propels the stone as it fills in the vacuum left behind. The basic idea behind the theory of *antiperistasis* involves the air acting as a continuing motive force. Beginning in late antiquity, the Greek commentator John Philoponus (AD 490–570) challenged Aristotle’s idea on the basis that a stone does not move simply by air blowing from behind for compulsion. In the Middle Ages, scholastics proposed several solutions to the problem of Aristotle’s *antiperistasis*. Eventually, a few versions of what is

known as impressed force theory circulated in the fourteenth century, and the most popular version was the “impetus theory” of John Buridan, the leading figure in the study of dynamics at Paris. He proposed that Aristotle’s external force was transmitted to the object during contact. The motive force (*virtus motiva*) is then internalized, and in the absence of external resistance, the object would continue to move indefinitely. This argument is essentially the medieval version of Newton’s first law of inertia.

With this background, my focus is to assess the poem’s deeper philosophical question regarding the dynamic between the mover and the moved: the point of contact between the “cause” and the effect.³⁵ In the Proem, the anxious narrator articulates his interest in the causes of dreams a total of seven times. He then defers to the authority of philosophers, such as Macrobius, who “The causes knoweth bet then I” (13). Macrobius, in fact, links the act of dreaming to the topic of motion itself: in the *Scipio*, he defines dreaming as one of the invisible “motions” of the soul. Chaucer’s narrator reflects on “what causeth swevenes . . . and why th’effect folweth of somme” (3–5, my italics) and “The gendres, neyther the distaunce / Of tymes of hem, ne the causes, / Or why this more then that cause is” (18–20). In other words, the “motion” of individual dreams is, to some degree, under consideration here. Chaucer scholarship has suggested that this opening Proem “is closely related to the debate, hotly contested in the fourteenth century, over future contingency.”³⁶ Relative to this debate, the focus on “cause” is also deeply entangled in etiological problems surrounding self-motion.

Crucially, the preservation of free will depends on the soul’s ability to move itself. As Macrobius argues in the *Scipio*, classical philosophers have been divided over the possibility of a soul’s self-motion, what the Platonists call αὐτοκίνητος (*autokinetos*). For Macrobius, inanimate objects, “though they seem to be self-moved, are really moved by something else, and we do not deny it.”³⁷ He adds, Plato “does not wish it [the soul] to be included among those things that seem to be self-moved but are really moved by a *cause* hidden within them.”³⁸ Aristotle and the Stoics flatly deny any possibility of a moving soul, not only given the paradox of self-motion, but also on the grounds that a soul has no magnitude and therefore cannot be in either circular or rectilinear motion. As Barbara Obrist sums up, “Christians defending the Platonic contention of the soul’s circular movement as derived from *Timaios* 34B where it is said that God curbed the World Soul into a circle, countered the Aristotelian argument by pretending that there are magnitudes of a spiritual nature, so their movements do not occupy any space.”³⁹ As we might expect, Aristotle’s arguments against the soul’s self-motion provoked Christian

commentators to protect human free will. In fact, Duns Scotus argued for the reality of self-change within the physical world and insisted that all motions, including both voluntary and involuntary ones, are truly *self*-motions.

Books 7 and 8 of the *Physics* also prompted medieval theologians to consider the mental process of decision making. Jean Buridan, for example, borrows the language and theory of fourteenth-century physics to explore human psychology. Strikingly, he used his own *impetus* theory in order to investigate the *quo ad causam* of human behavior. Joan Cadden's careful examination of Buridan's *Super libros Ethicorum* is highly relevant to our discussion here. In particular, Cadden draws attention to the analysis in Buridan's text regarding the "impetus of a passion" (*impetus passionis*).⁴⁰ This is, in fact, the same "impetus" we discussed earlier in the context of internalized motion. Buridan here compares the relative measurements of force and resistance to the careful balance between reason and passion. The same physical laws that govern the movement of bodies also operate on human appetite and the will. Cadden concludes,

John Buridan, whose scholarly production centered on natural philosophy, went a step further, not only echoing the psychological concepts like "appetite" and "judgment" familiar to medieval scholars from Aristotle's treatise *On the Soul* but also introducing the terminology of contemporary physics, such as "force" and "resistance." His arguments thus illuminate the medieval struggle to mediate between natural coercion and free will, and, at the same time, the expansion of natural philosophy into the neighboring discipline of moral philosophy.⁴¹

As we can see, the physics of motion provided theologians with a conceptual framework to examine difficult questions about human motivations. Indeed, the laws of physical dynamics were ubiquitous in the later Middle Ages and found their way into discourses on human psychology.

The soul, argues Macrobius, is in motion, even though it is not observed *ad oculos*. In fact, the soul's motions include all the actions of thinking, hearing, seeing, and dreaming.⁴² Aligning himself with Plato in this intense debate, Macrobius expresses great wonder at the soul's motion: "how profound the meaning of the phrase *source of motion* is, when applied to the soul, you will easily discover if you will imagine the movement of something invisible . . . coming forth and moving other things."⁴³ Similarly, Chaucer's narrator self-reflexively considers Boethian flights of thought on the soul's self-motion:

And thoo thoughte y upon Boece,
That writ, "A thought may flee so hye

Wyth fetheres of Philosophye,
 To passen everych element,
 And whan he hath so fer ywent,
 Than may be seen behynde hys bak
 Cloude"—and al that y of spak.

(972–8)

This allusion to the *Consolatio* refers to the self-moving soul and its ascent toward a vision of God. Boethius, in Book 5, assures the reader that the soul exerts its own force and thereby attacks the Stoic belief that it “lith subgit to the figures and to the notes of bodies withoute-forth” (v. m4.23–4). Is the soul’s activity, therefore, rooted in gestures of speech and thought? Does the narrator, then, express *autokinetos* in his ascent through the clouds? The comic effect is that the narrator is not *per se motus*, but is, in fact, subjected to *violent* motion in the talons of the eagle, another secondary mover. Furthermore, Boethian thoughts from the *Consolatio* are interrupted mid-sentence.⁴⁴ The narrator ends with a reference to clouds rather than “the verray knowleche of God,” which is the sentence that soon follows in Chaucer’s translation of Boethius.

The Macrobian dilemma—where objects that “*seem* to be self-moved, are really moved by something else”—is never fully resolved in the *House of Fame*. In spite of this medieval belief in *autokinetos*, the poem’s actions strongly support the Aristotelian axiom of movers. Within the dream, any evidence of internal cause (e.g., the soul’s *autokinetos*) is inevitably superseded by an ultimate exterior cause (i.e., a primary or secondary mover). By way of example, there are both internal and external causes for the betrayal in the Dido story, all of which compete for authority and are symptomatic of the *Aeneid*’s plurality of interpretations. Steven F. Kruger points out that “when Dido discovers Aeneas’s betrayal, she moves quickly to trace her situation back to an ultimate human cause: . . . ‘she [Anne] cause was / That she first loved him, allas’ (367–70).”⁴⁵ However, as we progress outward, we see that Anne (Dido’s sister) is actually not revealed to be the ultimate cause of the betrayal. It is, in fact, Mercury, who “Bad hym [Aeneas] goo into Itayle, / And leve Auffrikes regioun, / And Dido and hir faire toun” (430–3). A domino effect of secondary movers, analogous to the eagle’s waves, elevates “cause” beyond the powers of the soul, reaching out to the Prime Mover and the “goddys celestials” (460). On the surface, divine intervention ultimately outweighs the individual’s power to influence action. Likewise, the Proem’s internal causes of dreams—“folkys complexions” (21) and “spirites” (41)—are perhaps also overcome by a higher authority, “the holy roode” (57). But like the narrator’s internal imaginings of possible “causes,” Aeneas, too, will find internal causes

within the storehouse of his own psyche: “And thanne wol he causes fynde / And swere how that she ys unkynde, / Or fals, or privy, or double was” (283–5). Therefore, the narrator’s frantic search for the ultimate “cause” may in fact point to a struggle to find evidence for something that is truly *per se moveri*—self-moved. In sum, the search to discover an independent self-mover, the prevailing emblem of free will, is left unresolved.

Two contrary truths surface in the poem: logical analysis of *a priori* principles dictates that self-movers cannot truly exist, while Christian doctrine simultaneously requires a firm belief in *autokinetos*. However, the science of motion does not contradict the existence of human freedom, as demonstrated by Buridan’s adaptation of Aristotelian physics in the development of his own theory of moral psychology. In this context, Dido’s interiority, as exemplified in the clash between her reason and her passions, appears to support the soul’s *autokinetos*. For Macrobius, the invisible battleground, where the will resists attack from the warring appetites, is direct proof of a self-moving soul. Macrobius defends the Platonists and provides a list of the various manifestations of *autokinetos*:

Its motion is the discernment of good and evil, love of the virtues, yearning for the vices, from which flow all the streams of action that arise in us; its motion is what makes us angry and makes us lose our tempers in the heat of argument, till its mounting tide ends in the madness of warfare; its motion causes us to be swept away by pleasures and become slaves to passion. If the soul’s motions are governed by reason, their effect is salutary, but if reason is lacking, the end is ruin.⁴⁶

Like Dido’s internal psychology, which seems to be self-moved, Macrobius’s *autokinetos* of the soul and “its motion causes us to be swept away by pleasures.” It is, then, perhaps, Dido’s private emotions that point our attention to the internal movements of the soul.

Remarkably, the only *direct* reference to invisible motion in the *House of Fame* is, in fact, the eagle’s subaqueous waves:

Although thou mowe hyt not ysee
Above, hyt gooth yet alway under
Although thou thenke hyt a gret wonder.

(804–6)

This unique reference to invisible motion, however, is not directed at the soul, but rather, is part of the phenomenology of fluid mechanics. Essentially, the eagle conceptualizes *motus localis* as three-dimensional, moving in a specifically sinusoidal fashion; the implication, of course, is

that one cannot see the trough of the water wave (i.e., only the wave's crest is visible) in the same way that the motion of sound is not observable to the naked eye. Broadly speaking, the waves demonstrate how the dynamics of cause-and-effect operate irrespective of the limits of human sensory perception.⁴⁷ Invisible motions in the *House of Fame*—dreams, sound, thought, emotions, and subaqueous impulses—are then different *species* under the same *genus* of motion.

The pattern of causality in the *House of Fame* (as recorded in the Dido story) is strongly rooted in the eagle's lecture on motion. He articulates what seems to be the fundamental logic of the poem: "if A, then B, if B, then C, and so forth," or rather, "That whel [A] wol cause [then] another whel [B] / And that the thridde [then C], and so forth" (794). This logic drives the domino effect of amplification in the dream, that is to say, the addition theory of qualitative intensification. The eagle's language suggests that each discrete wheel in the spectrum represents a dynamic *cause* for the next larger wheel, as well as a kinematic *effect* derived from the previous smaller wheel. But Dame Fame, it would seem, is a judge that mocks logical succession and rules arbitrarily.⁴⁸ We consider the group of petitioners in Fame's court demanding that she "Telle us what may your cause be" (1563), and she predictably responds: "For me lyst hyt noght" (1564). The narrator also makes repeated claims of ignorance—"What her cause was, y nyste" (1542)—in the same manner that he confesses his lack of knowledge on the causes of dreams, "But why the cause is, noght wot I" (52). Is Fame, then, the poem's prevailing image of the unmoved mover? After all, Fame, a creature "never formed by Nature" (1366), is seen by Geoffrey to disregard the natural laws of Aristotelian physics (literally, by unnatural and sudden growth in size). This persistent anxiety directed toward the probing of "cause" fails to account for any evidence of logical succession and, instead, points to the relativity of human experience, which will be my focus in the remaining pages of this chapter. In Chaucer's poem, direct perception strongly outweighs logical analysis of "cause." In fact, the narrator's search for "cause" only offers a menagerie of false images; "he that fully knoweth th'erbe / May saufly leye hyt to his yë" (290–1); "Allas! what harm doth apparence, / Whan hit is fals in existence!" (265–6); and "Fro fantome and illusion / Me save!" (493–4). Finally, the search for a man of great authority appears to be related to the search for a self-moved mover.

The poem's distortions reflect the intension and remission of forms run amok, and these phenomena (*apparentia*) culminate in the discord of the poem's end:

Tho behynde begunne up lepe,
And clamben up on other faste,

And up the nose and yēn kaste,
 And troden fast on others heles,
 And stampen, as men doon aftir eles.

(2150–4)

The science of qualitative intensification dissolves into a massive heap of disorganized bodies. The eagle's waves, governed by laws of qualitative intensification, are reduced to random piles that grow with men who "lepe" and "clamben up on other faste." Whereas the eagle's waves amplify with "ech aboute other goynge," Chaucer subverts this ordered "multiplicacioun" with bodies that "troden fast on others heles." All of this energy is unleashed before the poem abruptly ends unfinished, in much the same fashion as Oresme's treatise on the kinematics of circular motion.⁴⁹ As will be argued in the final section of this chapter, (1) the relativity of motion to the perception of the observer presents a major obstacle for logical analysis, and (2) the poem never quite escapes the horror of the world's distortions until the relativity argument is understood.

Dimensional Alterations and the Relativity of Perception

It is clearly evident that both the narrator and eagle share a deep fascination with precision and measurement. For example, the eagle enthusiastically offers to inform our narrator of exact distances to varying points on earth:

And whan thou hast of ought knowyng,
 Looke that thou warne me,
 And y anoon shal telle the
 How fer that thou art now therfro.

(892–5)

The poet's Dantean tendency to record precise, absolute spatial dimensions contributes much to the dream's vivid realism (e.g., lines 1037–8; 1047–8; and 1927–30). Although the dimensions of space in the dream's structures and landscapes are tightly organized and accurately measured, they are quickly distorted or manipulated.

Distortion in the poem is firmly grounded in the idea of the relativity of motion to the perception of the observer, which has its origins in antiquity. Aristotle and Ptolemy both stressed the small size of the earth in comparison to the vastness of the universe. Following this tradition, Chaucer's narrator declares:

But thus sone in a while he
 Was flowen fro the ground so hye
 That al the world, as to myn yë,
 No more semed than a prikke;
 Or elles was the air so thikke
 That y ne myghte not discerne.

(904–9)

The eagle then prompts him to “behold this large space, / This eyr” (926–7). The notion of the earth as a point compared to the large space of the vast universe is a common *topos* that Chaucer takes directly from Boethius:

Certeyn thyng es, as thou hast leerned by the demonstracioun of astronomye, that al the envyrounyng of the erthe aboute ne halt but the resoun of a prykke at regard of the gretnesse of hevene; that is to seyn that, yif ther were makid comparysoun of the erthe to the gretnesse of hevene, men wolde juggen in al that the erthe ne heelde no space. (II.pr7.23–31)

Chaucer's narrator, contrary to expectation, does not draw any Boethian conclusions about the futility of earthly ambition.⁵⁰ Instead, Geoffrey's comment is rigidly limited to an interest in the mental faculties of perception. The narrator must “discerne” the earth's dimensions that “semed” astonishingly small “as to myn yë.” In other words, the perception of earth depends on our ability to make “comparysoun” and to “juggen.” Mental faculties are even capable of logical contradiction: “men wolde juggen in al that the erthe ne heelde no space.” It is precisely this astonishing power of sensory perception or misperception that provides the poem with haunting distortions and conflicting images (e.g., “al the world” vs. “a prikke”).

Of course, dimensional alterations in the poem are also rooted in the ambiguities of language, as well as language's participation in mental and poetic imagining. At the start of Book 1, for example, Chaucer brings to our attention the interplay between *motus localis* and narrative images. The narrator enters the temple and begins describing scenes “graven” from the *Aeneid*.⁵¹ First, these images are imbued with strong verbs depicting violent motion. When Aeneas “with hys shippes gan to saylle” (195), a violent storm arises:

Ther saugh I such tempeste aryse
 That every herte myght agryse
 To see hyt peynted on the wal.

(209–11)

So far, we are confronted with the paradox of stationary movement (i.e., “*aryse . . . peynted on the wal*”). The narrator then reinforces the paradox: “*Ther saugh I how the tempest stente*” (221). Chaucer clearly exploits the juxtaposition inherent in *ekphrasis*: the temporal and spatial dimensions of the image are in dynamic flux (i.e., *tempeste aryse . . . tempest stente*), and yet it firmly remains a stationary image “*peynted on the wal*.” This contradiction arises from the fact that the perceiving narrator defines the “motion” according to his imagination and memory. That is to say, motion is relative to the narrator’s framed attention.

Chaucer, therefore, calls attention to the role of perception in the phenomenology of dimensional alterations and the changing of forms. For example, the dimensions of Fame’s hall increase in size depending on the relative location and perception of the observer:

For-why this halle, of which I rede,
Was woxen on highte, length, and brede,
Wel more be a thousand del
Than hyt was erst, that saugh I wel.

(1493–6)

This phenomenon of qualitative intensification will occur again in the House of Rumor, where things grow “*evermo with more ences / Than yt was erst*” (2074–5), and, not incidentally, Chaucer repeats the very words (“*Than hyt was erst*”) in line 1496 to describe the structure’s changing dimensions. Fame’s house does not seem very large from the narrator’s viewpoint in the sky, but its “absolute” dimensions become more evident once he enters the hall. The noble queen Fame also provides an illustration of the narrator’s relative perception:

For alther-first, soth for to seye,
Me thoughte that she was so lyte
That the lengthe of a cubite
Was lengere than she semed be.
But thus sone in a whyle she
Hir tho so wonderliche streighte
That with hir fet she erthe reighte,
And with hir hed she touched hevene,
Ther as shynen sterres sevne.

(1368–76)

Fame’s dimensions—a *capite ad calcem* (from head to shoe)—increase dramatically while she remains passively seated on her throne. The narrator

is stunned by this sudden change in size and concludes that Fame is “never formed by Nature” (1366) and is, therefore, not subject to natural laws.

The poet is making the significant point that our awareness of relative perception depends upon where we stand to see. The dramatic comparison between the hall's small “lengthe of a cubite” and the queen's head having “touched hevene” recalls the comparison of the earth as a “prikke” *topos* contrasted with the hall's immense length of “a thousand del.” Chaucer does *not* believe that the world—“a prikke”—actually grows bigger when the narrator is brought back down to the earth. Nor does he believe that a solid building “Was woxen on highte, length, and brede, / Wel more be a thousand del / Than hyt was erst.” Rather, “as to myn yē” it “semed” to grow. A ship on the distant horizon appears to be the size of a shipman's thumb, but it would be illogical to *assume* the perception to be the ship's actual size. But does Fame herself actually increase in size? Or is it our *perception* of fame which grows? The comic effect is that the narrator is so amazed by the hall's brilliant interior and intricate decoration that he is completely oblivious to having walked “a thousand del.” With the relativity of perception in mind, Fame's height, too, would predictably increase “in a whyle” as the narrator paced from one end of the hall to the other. The narrator simply “*thoughte* that she was so lyte.”

Pointedly then, the realm of poetic imagination does not necessarily conflict with scientific law. In fact, Fame's teratology (or deviation from normal organic type) embodies the multiplicity of sensory perception with her innumerable eyes, ears, and tongues. She is small or large, depending on what pair of eyes is used to view her. Chaucer's argument is perhaps a psychological one: whereas the intension and remission of fame's image is dependent on human perception, the *quality* of fame itself remains constant. This reliance on human involvement once again reasserts the “doctrine of participation.” Chaucer's heightened emphasis on the viewer's comprehension of perceived objects—that is, his focus on the viewer rather than the viewed—recalls Lady Philosophy's statement that “alle thing that is iwist nis nat knowen by his nature propre, but by the nature of hem that comrehenden it” (v.pr.6.2–4). As we might expect, Fame thus depends on a comprehending audience for her growth and diminution.

The relative dimensions of Dame Fame are also reminiscent of Symkyn's snide remark aimed at the Cambridge scholars (Aley and John) from the *Reeve's Tale*:

Myn hous is streit, but ye han lerned art;
Ye konne by argumentes make a place
A myle brood of twenty foot of space.

As I mentioned in chapter 1, Woods notes in his analysis how this comic jibe resonates with Albert of Saxony's elaborate thought experiment, where God could create within a millet seed "a space of 100 leagues, or 1,000, or however many are imaginable," and all this is "without altering its dimensions."⁵² Like Albert's example of the millet seed, Fame's "Colle tregetour" (1277)—a clerkly magician seen carrying a windmill under a walnut shell (1280–1)—alters the contents of dimensional space using "magik naturel" (1266). This "magic" and other seemingly unachievable phenomena (e.g., placing a large object under an even smaller one) are only made possible through the narrator's capacity to *perceive* dimensional transformations in the real world. Undoubtedly, Chaucer develops these concepts from Boethius: "men wolde juggen in al that the erthe ne heelde no space." Chaucer's contemporary, Julian of Norwich, also imagines the smallness of Earth, "as rounde as a balle," which lies in the palm of her hand as a "little thing, the quantitie of an haselnott."⁵³ The recurrence of millet seeds, walnut shells, and hazelnuts in the cultural imagination of the fourteenth century indicates a formally structured mental exercise—or thought experiment—for positioning imaginary spaces within real places. In chapter 5, we will examine how modal logic and the human powers of imagination combine to enable human beings to imagine genuine alternative "realities" or possible worlds. As we stated earlier, Geoffrey's dream is essentially a full-blown fourteenth-century thought experiment that contemplates the possibilities of dimension alteration, and the poet here exploits late medieval trends in imaginative and scientific speculation, where worlds are considered in terms of void and infinite space.

More precisely, Chaucer directs our attention to the unexpected overlap of poetic imagination with scientific inquiry, particularly in the final scene of Book 3 when Geoffrey encounters the Whirling Wicker. In the final pages of this chapter, the world and all the things contained in this world are revealed to be part of a closed mechanical system, and the operations of this closed system are what influence the narrator's thoughts and perceptions. The reality of Chaucer's universe, I will argue, lies in the relative perception of qualitative intensification, and the poet accomplishes this realism by imagining another thought experiment, where he pushes the relativity argument to the extreme and advocates for Earth's daily rotation on its axis. This is indeed Chaucer's *coup de grâce*.

Celestial Mechanics and the Wicker-Globe

First, we begin with the narrator's presentation of "Domus Dedaly, / That Laboryntus cleped ys" (1920–1), which is observed to rotate

rapidly about its axis. The properties and actions of this *perpetuum mobile* are problematic, and modern critics generally remain unconvinced by any attempt to unify the various details articulated by the narrator, for in many of the features of this rotating house, "precedents or parallels are hard to find."⁵⁴ Some critics have drawn parallels with the revolving castles in medieval romance. Britton Harwood's grammatical analysis is also intriguing: "the castle is stocked entirely with subjects, the house of Rumor entirely with predicates."⁵⁵ But, on the whole, Chaucer's whirling house stands apart as it embodies characteristics of our planet with its vast assortment of occurrences and contrasting possibilities:

And over alle the houses angles
 Ys ful of rounnynges and of jangles
 Of werres, of pes, of mariages,
 Of reste, of labour, of viages,
 Of abood, of deeth, of lyf,
 Of love, of hate, acord, of stryf,
 Of loos, of lore, and of wynnynge,
 Of hele, of seknesse, of bildynges,
 Of faire wyndes, and of tempestes,
 Of qwalm of folk, and eke of bestes;
 Of dyvers transmutacions
 Of estats, and eke of regions;
 Of trust, of drede, of jelousye,
 Of wit, of wynnynge, of folye;
 Of plente, and of gret famyne,
 Of chepe, of derthe, and of ruyne;
 Of good or mys governement,
 Of fyr, and of dyvers accident.

(1959–76)

This energized house not only contains the contraries that engender motion (e.g., "Of faire wyndes, and of tempestes") but also contains the disparate earthly inhabitants who move and are moved within the earth's whirling circle of possibilities:

And, Lord, this hous in alle tymes
 Was ful of shipmen and pilgrimes,

 Saugh I eke of these pardoners,
 Currours, and eke messagers.

(2121–8)

The two passages above suggest to critics that the house is a “*mundus*,” a “macrocosm,” and “the turning world”: Chaucer’s rotating house is specifically earthly and *not* celestial.⁵⁶ In other words, the rotating house becomes a representation of an earth that contains the range of human experience.

On the surface, the existence of worldly sound in this rotating body appears to contradict the eagle’s lecture on sound theory. In Book 2, the eagle informs the narrator that all sound moves from Earth directly to the House of Fame. But why does sound arrive in the Wicker House before it finally reaches its natural place in Fame’s court? Again, this is *not* problematic if we consider the Wicker House as an imaginative representation of Earth itself. The House of Rumor is “under the castel” of Fame (1919), a site geometrically analogous to the terraqueous globe, which also lies in this exact location below Fame’s house. So, the *domus* figuratively *is* Earth. Sound travels upward from the wicker-globe “streght to Fame” (2111) where it is organized and processed as “she [Fame] gan yeven ech hys name” (2112).

For medieval thinkers, the observer’s relative position was crucial to understanding the complexities of celestial kinematics. Indeed, the narrator’s observations of this rotating house reflect discussions that surfaced in the fourteenth century on relative motion. To clarify, the Aristotelian system of celestial bodies offered a basis in the Middle Ages for imagining Earth as completely stationary in its position at the center of the sphere while planetary bodies rotate around the celestial poles. Moreover, Aristarchus of Samos’s concept of a heliocentric universe was relatively unknown in the Middle Ages, despite similar notions set out by Macrobius and Martianus, who believed Venus and Mercury had heliocentric orbits and not geocentric orbits. That said, it is known that Jean Buridan had used the “Capellan” system in the fourteenth century and “may have been the first to present an unequivocal description of heliocentric orbits for Venus and Mercury within a system of eccentrics and epicycles, an arrangement he regarded as ‘probable.’”⁵⁷ Moreover, the overwhelming acceptance of a geocentric universe in the Middle Ages did not necessarily include a stationary Earth. In fact, Ptolemy states very clearly in the *Almagest* that for some ancient astronomers, “there is nothing against their supposing, for instance, the heavens immobile and the earth as turning on the same axis from west to east very nearly one revolution a day.”⁵⁸ Beginning in 1271, William of Moerbeke’s Latin translation of Aristotle’s *De caelo* (On the Heavens) communicated to his medieval readers the alternate idea of the earth’s diurnal motion (*motus diurnus*) on its axis. In fact, J. D. North mentions that Aristotle’s *De caelo*, a possible source for the eagle’s lecture,

was actually one of the books listed in the Oxford statutes of 1340 “on which a bachelor may lecture as one of the exercises for inception.”⁵⁹ Even so, the controversial notion became well known by the fourteenth century even to those “who read cursorily in astronomy and cosmology.”⁶⁰ Chaucer certainly falls in this category, as evidenced by his *A Treatise on the Astrolabe* and other texts.

In the fourteenth century, well-known academics explicitly argued for the alternate and controversial idea of a *rotating* earth. Medieval thinkers were very familiar with the work of Heraclides of Pontus (390–310 BC), who posited a diurnal rotation of the earth at the geometric center of the universe and thereby accounted for the rising and setting of objects in the heavens. For example, Thomas Aquinas writes in his commentary on Aristotle’s *De caelo*:

Indeed, the appearance of motion is caused either by the motion of the thing seen or by the motion of the one who sees it. For this reason some people, assuming that the stars and the whole sky rest, have posited that the earth on which we dwell is moved once daily from west to east around the equinoctial poles. Thus by our motion, it seems to us that the stars are moved in a contrary direction, which is what Heraclides of Pontus and Aristarchus are said to have posited.⁶¹

This system justified many of the inexplicable phenomena in celestial mechanics. Ockham’s famous “razor” or principle of parsimony certainly supports a rotating Earth in favor of God propelling innumerable celestial bodies at infinite speeds around a stationary Earth. In short, philosophers in the fourteenth century stressed the relativity of motion in the rival theory that Earth rotates on its axis. In particular, several convincing arguments were put forth in the medieval commentaries on Aristotle’s *De caelo* and, most incisively, in the writings of Parisian philosophers Jean Buridan (ca. 1300–58) and his pupil Nicole Oresme (ca. 1320–82). In fact, Nick Havely and Helen Phillips see Oresme “among the more modern *grete clerkys* who may have contributed to *HF*’s learned skepticism.”⁶²

Both Buridan and Oresme use the example of a moving ship to illustrate the relativity of motion. If a person stands on a moving ship that is directly across from a stationary ship, one can imagine how the opposite effect is possible if the person believes instead that his ship is, in fact, at rest. That is to say, this optical illusion, or mind-trick, permits the other ship to be in motion “because his eye would be completely in the same relationship to the other ship regardless of whether his own ship is at rest and the other moved, or the contrary situation prevailed.”⁶³ Macrobius,

in his commentary on the dream of *Scipio*, recites a similar case from Aristotle:

Of all things that are in motion, some are moved essentially and some accidentally. Those bodies are accidentally moved which, though they are themselves not in motion, are nevertheless in something that is in motion, as in the case of cargo or a motionless passenger aboard a ship, or, again, when a part is moving but all the rest of a body is quiet, as in the case of a person standing still and moving a foot, a hand, or his head.⁶⁴

It appears that Macrobius considers accidental motion as part of a closed mechanical system (i.e., a “motionless” passenger aboard a moving ship). Similarly, in his commentary on Aristotle’s *De caelo*, written in French, Oresme notices that “se en une naif meue estoit aer enclos, il sambleroit a celui qui seroit en cel aer que il ne se meust” (if the air were closed in on a moving boat, it would seem to a person in that air that it was not moving).⁶⁵

Ptolemy, however, argued against the earth’s diurnal rotation, stating that objects above the earth’s surface would appear to move westward if the earth rotates eastward (i.e., rotates clockwise). Similarly, Buridan failed to explain why an arrow, when shot vertically above the earth, would not descend to the ground west of its starting point. Instead, we observe that the arrow falls again in the same location from where it was projected upward. Oresme, however, devised a kind of “closed mechanical system” to rationalize diurnal rotation. He argued that the arrow belongs to the earth’s mechanical system and therefore shares the earth’s longitudinal movement. Therefore, the only motion perceptible to the observer is the vertical rise of the arrow. This argument is not unlike Macrobius’s description of accidental motion, where a passenger on a moving ship *seems* to be motionless. Oresme concluded that the earth’s rotation from west to east made a more harmonious universe with every planet moving in the same direction. Both Oresme and Buridan, however, would ultimately disengage from this view largely on theological grounds.

Now let us return to Chaucer’s energized house. As I said earlier, critics generally recognize the House of Rumor to be a *mundus* of sorts, which rotates on its axis in a rapid spinning motion:

And ever mo, as swyft as thought,
This queynte hous aboute wente,
That never mo hyt stille stente.

The only objects “not lyte” and known to move “ever mo” are celestial bodies, which are unimpeded by resistance in Aristotle’s ether and are observed to move *ad infinitum*. The rotating house is a structure of immense curiosity for the narrator. However, he is quick to notice that admittance is practically impossible, despite the fact that the house has “A thousand holes, and wel moo, / To leten wel the soun out goo” (1949–50). He concludes:

Ne shalt thou never kunne gynne
To come into hyt, out of doute,
So faste hit whirleth, lo, aboute.

(2004–6)

With the help of the eagle’s supernatural powers, the narrator’s wish to enter the house is fulfilled. Once inside the whirling *domus*, he makes a startling observation:

And therwithalle, me thoughte hit stente,
And nothing hyt aboute wente.

(2031–3)

Here, the narrator’s perception of motion changes dramatically when he observes that “hit stente.” It becomes clear that the narrator now participates in the closed mechanical system of the planetary house.

The House of Rumor—if a figure for the inhabited earth—is a brilliant model of fourteenth-century academic trends that present the relativity of motion for the perceptive observer. The narrator informs us that inside the building “I alther–fastest wente / *About*” (2131–2, my italics). It is no coincidence that the house, too, “aboute went” and “whirleth, lo, aboute” (1925). The house’s rotational motion *appears* to have halted only as the narrator participates in the same “aboute” motion as the whirling house. In other words, the narrator only “*thoughte hit stente*” (emphasis mine). Similarly, Oresme tries to convince his audience that if a man were hypothetically situated in the heavens, and moving in circular motion around Earth, it would *appear* to him that Earth rotated with daily motion and that all the celestial bodies were at rest. As Oresme postulates, the reverse effect could happen to a man on Earth, where the heavens would appear to move about a stationary Earth. The House of Rumor is therefore observed to rotate only when the narrator himself rests at a considerable distance from above. When he is inside, the house

and all the objects within the closed system in fact remain in motion: "Ne never rest is in that place" (1956).

We do not observe Earth rotating on its axis because we share its rotational motion. The narrator becomes Macrobius's "motionless passenger" in accidental motion. Following this line of argument, the House of Rumor would *appear* to halt—"thoughte it stente"—when the narrator enters it. Chaucer's paradigm is also analogous to the *quo ad effectum* of Oresme's arrow, which involves the projectile moving in the same horizontal motion as the earth. This case is a brilliant and pointed corollary to the ideas of fourteenth-century authors who—in order to make plausible the Earth's diurnal rotation on its axis—stress the relativity of motion to the perception of the observer. Chaucer suggests that Geoffrey is rotating within a closed mechanical system (Earth), which allows for the optical illusion of a stationary interior—a still point for observation.

Aristotle, Ptolemy, and the Bible all established the predominant belief that the earth remained stationary at the center of the universe. In a poem that deliberately obfuscates truth and directly challenges *auctoritas*, it is expected that alternative perspectives on cosmic events would negotiate for equal authority. Coincidentally, Oresme challenges biblical evidence that the sun moves around the earth (Eccles. 1:5–6 and Ps. 92:1), which, he believes, merely reflects "la maniere de commun parler humain" (2.25.141d; the customary usage of popular speech). The philosopher supports his claim by citing instances where "Dieu se repentit et que il se courrousa et // (142a) rapaisa et teles choses qui ne sont pas ainsi du tout comme la lettre sonne" (2.25.141d–142a; God repented, and He became angry and became pacified, and other such expressions which are not to be taken literally). In Joshua 10:12–14, God commands the sun to stand still over Gibeon, lengthening the day so that Joshua's armies could hack away at the fleeing enemy. Oresme, however, re-interprets this passage in order to bolster his relativity argument, noting that the sun moves "et tout selon apparence; mais selon verité, la terre se arresta ou temps de Josué" (only apparently so; for, in fact, it was the earth which stopped moving in Joshua's time), but he also acknowledges, "en ce n'eust difference quant a l'effect qui s'en ensuit" (2.25.142a; whichever occurrence we prefer to believe, *the effect would be the same* [emphasis mine]). It then follows that all arguments *pro et contra* the earth's rotation are equally valid because the evidence used to support either case is ultimately grounded in sensory perception, which is, of course, highly fallible. Since we are inevitably and perpetually trapped within the confines of a closed system (e.g., a ship or living organism), Oresme therefore concludes his thesis with an incipient awareness of the limits of phenomenology. He writes: "Mais se il est de tel corps ou de tel, ce jugement est fait par les sens de dedens, si

comme il met en *Perspective*, et sont telz sens souvent deceus en telz cas, si comme il fu dit devant de celui qui est en la nef meue." (2.25.144b; But if the motion is relative to some particular body or object, this judgment is made by the senses from within that particular body, as Witelo explains in *The Perspective*; and the senses are often deceived in such cases, as was related above in the example of the man on the moving ship).

Medieval considerations of closed mechanical systems perhaps date back to the thought experiments facilitated by Bishop Tempier's Condemnations of 1277 at the University of Paris, which argued for the supernatural possibility of other worlds and closed systems existing within larger systems. For example, Article 34 of the Condemnations maintained that God ("the first cause") has the power to create other worlds whenever he wished (*quod prima causa non possit plures mundos facere*).⁶⁶ This argument led medieval natural philosophers to "abandon Aristotle's basic idea that only one center and circumference could exist" and, instead, to argue that "a multiplicity of equal centers and circumferences could exist simultaneously [so that] the elements of each world moved towards or away from their own center."⁶⁷ It was posited that another world could exist beyond our world, where objects moved toward different centers of gravity. Oresme (among others) imagined,

un monde fut *dedens* [my italics] un autre monde . . . dedens la lune ou autre estoille est un monde tel comme cestuy . . . un autre monde sus cestuy et un autre souz celuy qui est souz cestuy

(1.24.36a-b; one world is *inside* another world . . . another world like our own to exist in the moon or some other star . . . another world above and another beneath the one which is our world).

Medieval readers of astronomy were perhaps receptive to the ideas of Martianus, Macrobius, and Heraclides of Pontus, who proposed that Mercury and Venus revolved about the sun, an alternate center, while the planets' satellites orbited around Earth. The only way to rationalize observed phenomena was to dislocate the literal center of the universe, where eccentric spheres moved around centers located near but not precisely around Earth.

The *House of Fame* engages in medieval thought experiments that postulate multiple centers of gravity and the plurality of worlds. Of course, the visual dynamic between Geoffrey and the wicker-globe reinforces the relativity of what constitutes a center. Indeed, multiple "worlds" surface in the *House of Fame*. The list includes the House of Rumor, the eagle's natural world, the painted world in Venus's temple, the dream world, and the competing literary worlds of Ovid and Virgil. More important,

Fame's court is an alternate world with its own center. It contains otherworldly creatures that are "never formed by Nature" (1366). Chaucer imagines Fame's location as a central position with a distinct center of gravity:

Ryght even in myddes of the weye
 Betwixen hevene and erthe and see,
 That what so ever in al these three
 Is spoken, either privy or apert,
 The way therto ys so overt
 And stant eke in so juste a place
 That every soun mot to hyt pace.

(714–20)

For medieval commentators on Aristotle, there is only one possible center: the geometric center of the earth. However, light objects gravitate to their natural place in the vast sublunar elemental spheres, which are not centers *per se*. As we indicated earlier, this topic in medieval cosmography and earth science is epitomized in Dante's *De situ et forma aque et terre*. Dante attacks the rival theory that water and earth have different centers of gravity, which would explain the elevation of dry land in water, and he instead attributes the protuberance of earth to the celestial influence of the eighth sphere.

But Chaucer's focus is clear and consistent in the poem: Fame's court is one of *many* alternate centers, and these shifting centers of perception are part of the dislocations that occur in the poem. As opposed to a vast layer of air beneath the fiery sphere, Chaucer imagines a localized, alternate center of gravity—"so juste a place" (719)—designed specifically for sound, which is positioned "amyddys of these three, / Heven, erthe, and eke the see" (845–6). Of course, Ovid mentions that sounds emanate from the House of Fame, but Chaucer develops this argument further in his insistence that Fame's location is, in fact, a central point of gravity for the natural motion of all sound. Chaucer positions this "kynde place in ayr" as an alternate natural place, drawing forth sound so that it "Moveth up on high to pace / Kyndely to Fames place" (851–2). However, Chaucer rapidly dislocates the center with the retelling of tidings: sound is initially confined to Fame's court, but it is not long before Fame's messenger spreads the reports at random back into the sundry regions of the world.

The stated reason for Fame's central location, as opposed to Aristotle's vast sublunar sphere, is also pragmatic—being the most "conservatyf [preservative of] the soun" (847). Allowing for a distinct center of gravity does not contradict the law of parsimony because sound arrives at Fame's

house most “conservatyf” in intensity. Sound would evidently diminish in intensity to the point of non-existence if it had to travel extraordinary distances. However, Ovid’s geographical position is on the ground—literally *orbe medio* (the center of the world)—whereas Chaucer’s palace is situated in the air far above ground. In Chaucer’s description, Fame’s specific *locus* is, in fact, a geometrical paradox, for the simple reason that it becomes impossible to plot a single point in three-dimensional space with the precise coordinates “betwixen hevене and erthe and see.”⁶⁸ This dimensional crux is perhaps emblematic of the ways in which the poem’s plurality of centers and episodic fits of sensory illusion put to test the medieval belief in an ordered *locus* in the cosmos. Within the sublunar regions of mutability, the poem’s relativity argument and serial displacements undercut the centrality of *locus*.



Chaucer’s philosophical understanding of *locus* is largely grounded in the Boethian knowledge of relative perception, and as we have argued previously in this chapter, the poet’s efforts culminate with the celestial mechanics of *Domus Dedaly*, an imagined representation of a rotating world. This closed mechanical system provides a framework to advocate for the controversial idea of the earth’s diurnal rotation on its axis. What is more, the aesthetic and narrative possibilities of relative motion provide matter for the poet. After all, Chaucer’s thought experiment *secundum imaginationem* expresses the poet’s highly developed philosophical sense of complex truth and the plurality of meaning. It is also worth repeating and indeed emphasizing that Chaucer’s own contemporaries regarded him, first and foremost, as a philosophical writer engaged in fourteenth-century academic culture: Thomas Usk identified him as the “noble philosophical poete in Englissh.”⁶⁹ Not surprisingly, the poetic fascination with relative motion and the deception of sight will also reappear two centuries later alongside early modern developments in optics. In Shakespeare’s the *Merchant of Venice*, for example, Bassanio, the Italian lord and suitor to Portia, opens the leaden casket and discovers an almost perfect replica of Portia’s face. Gazing intently at her image in the picture, he begins to question: “Move these eyes? / Or whether riding on the balls of mine / Seem they in motion?” (3.2.115–18).⁷⁰ Like the medieval example of two ships positioned side-by-side at sea, stationary objects “seem” in motion to a moving observer. But it is more likely (though impossible to confirm) that the motion of Bassanio’s eyes in fact trick him into projecting movement in the portrait. Analogously, Geoffrey’s rotational motion within the closed mechanical system of the wicker-globe misinforms the

narrator even to the point that he “thoughte hit stente.” This is not to say that Shakespeare necessarily drew from Chaucer, though there are also possible allusions to the *House of Fame* in *Titus Andronicus* and in *2 Henry IV*.⁷¹ But we can expect such philosophical poets, the supreme masters of problematizing the relative, to engage in evolving discourses centered on the philosophy of physics.

Chaucer’s thought experiment consciously pushes to extremes the medieval pleasure in finding sources of illusion. Although the deception of sight is an obvious concern for the dreamer, it becomes evident that *language* (a product of sound) is in fact the ultimate agent of distortion. As Chaucer has shown, the intension and remission of language in the transmission of tidings only serves to obfuscate truth and dissolve authority. The science of qualitative intensification and the new conceptual languages for measuring variations in a quality are limited by the fact that qualities can change beyond measure even during the present act of measuring them. Similarly, Olson has shown that the *Summoner’s Tale* “becomes a comic invitation to question how far principles, or ideologies, of rational measurement can be fruitfully applied.”⁷² Still, Chaucer does not simply mock contemporary efforts to measure the multitude of forms in the universe. Rather, the poet dissuades his audience from measuring those abstract qualities that cannot possibly be measured. Likewise, the dreamer of *Pearl*, in awe of his “wonder perle” (4.221), reflects on how these sublunary standards of measurement are wholly inadequate: “A mannez dom mozt dryzly demme / Er mynde mozt malte in hit mesure” (4.223–4).⁷³ When motion itself (or its privation) cannot at all be positively determined, how can Geoffrey even attempt to measure the intangible and changeful Fame? In a world with a plurality of languages and cultures, fame, too, is relative.⁷⁴ Inside the funhouse of relative perception, the logical analysis of language is inevitably abandoned.

Although alterations of space and verbal meaning thwart the narrator’s repeated attempts to apply scientific measurement, or *ars metrik*, the inquisitive Geoffrey does not allow these events to get in the way of pragmatism. Common sense informs the Ovidian ethos of *omnia mutantur*. These and other related issues comically undermine the absolute authority of the eagle’s lecture, and the narrator is inevitably forced to reevaluate the eagle’s statement on measurement—his ability to determine “How fer that thou art now therfro” (895). In the sublunar realms of anamorphosis, Geoffrey discovers he can only rely on the authority of his *own* perception, albeit relative to self-derived conceptions of time and place. Geoffrey can only confirm that “Y wot wel y am *here*” (980, emphasis mine): this first-person point of view applies temporal and spatial variables for seeing and knowing that are uniquely the narrator’s own.

The narrator's reflexive statement reverberates with a crucial point of Macrobius's commentary, the fact that "each individual, as he looks about him, has his own horizon."⁷⁵ Like Macrobius, the narrator *defines* the motion from the vantage point of his own center. Again, Geoffrey asserts:

I wot myself best how y stonde;
 For what I drye, or what I thynke,
 I wil myselfen al hyt drynke,
 Certeyn, for the more part,
 As fer forth as I kan myn art.

(1878–82)

The narrator derives a sense of certainty from an awareness of his own structures of experience. He confirms this developing perception with the repetition of "I" and "myself" in the same sentence, a repetition that supports the idea that empirical observation ultimately depends on the shifting *individual* perceptions of a first-person point of view. Linda Holley contextualizes Geoffrey's self-assertion in terms of the "sense of his place in the culture of the fourteenth century... there is the suggestion of a poet's hope of a new text that draws attention to spatial and temporal incertitude *as* it provides the place for seeing."⁷⁶ One other point, from Holley, is the fact that Geoffrey, "although he may take into account what he knows, the instructive task now is to understand what it is we *cannot know* and thereby gauge *what we do know*."⁷⁷ Although Geoffrey falls back on "incertitude" during his moments of self-reflection, his concomitant awareness of unknowing as a form of knowing provides ironic satisfaction to himself and his audience. A. C. Spearing also notes the hesitation in these lines: "'Certeyn, for the more part' gives certainty with one hand and takes it away with the other—and so does their obscurity... the lines offer what looks like an attempt by Chaucer to focus on the mysterious possibility of a self distinct from its definition by others."⁷⁸ Even so, objects *always* move in relation to other objects. Suppose an object (or soul) is placed within a vacuum: is it possible, then, to determine its self-motion without using any other points of comparison by which to measure it? Indeed, self-motion implies a contradiction of sorts. Paradoxically, one condition for self-motion is the existence of yet *another* object to track its movement. As a corollary, the medieval poet is always participating in the archive of texts but is never fully "self-moving." Rather, the poet always reacts, finds, and "invents" (in the medieval sense)—that is, in relation to another text, which, in turn, responds to another, and so on.⁷⁹ Chaucer, I believe, never gives up on the moved mover. Despite Macrobian beliefs

about self-motion, the narrator still continues his neurotic search for ultimate “cause,” which might be attributed to medieval anxieties about the supremacy of secondary movers. The possibility of a self-moved soul is, after all, not at all supported by the eagle’s lecture.

Still, the dream guarantees a transmission of knowledge through the poem’s signposted movements to distinct, identifiable “places.” In this vein, the shifting dislocations throughout Geoffrey’s aerial pilgrimage deliver a view of perceptual experience that is both positive and reassuring. Geoffrey tells his friend in Fame’s house “the cause why y stonde *here*” (1885, my italics):

For certeynly, he that me made
 To comen *hyder*, seyde me,
 Y schulde bothe here and se
In this place wonder thynges.

(1890–3, my italics)

He comes to hear and see tidings of love, “But these be no suche tydyn- ges / As I mene of” (1894–5). However, Geoffrey successfully manages to carve out a foothold for his *own* place amid the chaos and confusion in Fame’s house. He connects this specific “place” with (1) what he already knows (1897–1900) and (2) with what he did *not* know (1901–2). The oxymoron “certeynly, y nyste” (1901) is intentionally muddled, but it is also emblematic of the poem’s ironic statements on the value of certainty in the face of *uncertain* knowledge.

Geoffrey acquires knowledge through phenomenal incidents of displacement. Indeed, Geoffrey’s new friend decides that going to a new *place*—that is, “change of place”—will grant him new tidings of love. His friend confidently asserts:

But now no fors, for wel y se
 What thou desirest for to here.
 Com forth and *stond* no lenger *here*,
 And y wil thee, withouten drede,
 In such *another place* lede
 Ther thou shalt here many oon [love-tidings].

(1910–15, emphasis mine)

Of course, the rotating house of Rumor—“another place”—provides a new platform to “stond” and therefore promises a fresh, new perspective. What is more, it presents a *multiplicity* of possible places for Geoffrey to move and think. In short, “change of place” in the poem refines the term

“motion” to mean a change of mind due to shifting perspectival places. Geffrey is not interested in the exact location of stars and constellations—“wher that they stonde” (1010) and “her places here” (1014)—but is far more concerned with where he *himself* stands to perceive in relation to the firmament. The poet-dreamer, then, also refines the eagle’s doctrine of natural place to a point that objects do not have one, but *many* places that might be deemed “natural”—that is, according to the one who sees them. Perhaps, then, medieval readers entertained the possibility of a soul that was both moved and self-moving.

The relativity argument is no doubt problematic, but this new medieval insight also means that the cognizant narrator is, oddly enough, subject to the same laws that govern intension and remission, bringing to mind the well-known Horatian adage, *non sum qualis eram* (I am not such as I was). As the narrator journeys forth in the dream vision, his perceptions also develop “evermo with more ences / Than yt was erst,” thus unfolding the subtle marks of his mind and character. The internal motions of Geffrey’s mind elevate his thoughts to a point that he reflects on the motive energies of all things in the sublunary realm. After Geffrey experiences motions in the houses of Fame and Rumor, he determines that *all* things will eventually move “out” within the infinite spaces of time: “For al mot out, other late or rathe, / Alle the sheves in the lathe” (2139–40). Geffrey now understands the deeper meaning of this conventional truism, finally adopting and internalizing Dido’s earlier warning that “*every thing ys wyst, / Though hit be kevered with the myst*” (351–2, emphasis mine).

Geffrey’s statement is put to test when he next hears and sees a commotion happening near the corner of the hall. The narrator “gan thiderward beholde” (2144) and soon sees a man stationed in this corner. This man “semed for to be” (2157) of great authority, for the stated reason that he is rigidly fixed in one place. By contrast, all other bodies move rapidly toward him, the motion becoming increasingly violent with each person getting closer: first, every wight is “rennyng” (2145) directly toward him, and then they “behynde begunne up lepe / And clamben up . . . troden fast . . . and stampen” (2150–4). This great man—immobile—becomes a new center of gravity for creatures moving and being moved to their “natural” place. Even Geffrey, himself, gravitates “thiderward.” However, we easily forget that the man of great authority is, after all, moving at incomprehensible speeds. Within the closed mechanical system of the *domus*, he, too, is swiftly rotating like everyone else. He is merely one of many “concentric,” gravitational centers of authority. Although he seems to promise a solid, unwavering truth, he, too, “mot out” along with the rest of the sheaves in the barn. The one thing that does, in fact,

come to a sudden, motionless halt is the dream itself. Ironically, this *anti*-motion is the poem's only real evidence supporting the existence of self-motion in the cosmos. It is *Geffrey* who halts the motion of the dream with his self-effacing mirror image: a man who "of love-tydynges told" and who stands in his own self-conscious literary center. In other words, he defines the center and therefore plots the motion for the poetic production of his dream. From his vantage point, the cosmos does indeed rotate around *him*. As the poem ends abruptly, *Geffrey* sees and is seen at the Macrobian limits of "his *own* horizon." This refinement of psyche is the final end to Chaucer's rich thought experiment based on our human perception of the cosmos and our place within it. Moreover, it reveals a poet's creative powers finally and inevitably soaring "Wyth fetheres of Philosophy" (974).

PART II

ALCHEMY

CHAPTER 3

ALCHEMICAL ALLEGORY AND TRANSFORMATIVE ACTION IN THE *FRANKLIN'S TALE*

During the 40 years since the publication of Joseph E. Grennen's watershed essay on the unity of Fragment 8 (or Fragment G) of the *Canterbury Tales*, Chaucer criticism has continued to acknowledge an allegorical treatment of alchemy beyond the limited confines of the *Canon's Yeoman's Tale*. In the *Second Nun's Tale*, Grennen points out, "there are so many details in the legend which parallel ideas, motifs, and catch-phrases (what may be referred to generally as the 'topics') of alchemy."¹ Critical assumptions regarding the poet's treatment of motifs and themes relevant to medieval alchemy and its religious overtones are made possible by decades of Chaucer scholarship that have subsequently identified oppositions and similarities between the legend of Saint Cecilia and the Tale of the Canon's Yeoman.² The fact that Chaucer wrote a significant portion of the *Canon's Yeoman's Tale* as a separate and earlier work—a claim that is supported by internal, textual, and historical evidence³—suggests that alchemy provided Chaucer with poetic material at varying points throughout his artistic career. In fact, an explicit reference to alchemy appears in Book 4 of *Troilus and Criseyde*, and such alchemical imagery indeed extends throughout the narrative (see chapter 4 of this book). In other words, there is no evidence that Chaucer intended to confine the alchemical lexicon to Fragment 8.

Only a handful of scholars have recognized the possibility of alchemy in other tales. Ann W. Astell's *Chaucer and the Universe of Learning* links Fragments 2 and 8, arguing that "the language of alchemy by extension also illumines the Man of Law's tale of saintly Custance."⁴ Eric Weil links the *Canon's Yeoman's Tale* directly to the *Manciple's Tale* in terms of

alchemy's color changes on the crow's body.⁵ Mark J. Bruhn, in discussing the structure of the *Canterbury Tales* as a whole, believes that "Chaucer could hardly fail to recognize that the verbal discourse of alchemy mirrored in significant ways his own poetic discourse."⁶ Finally, Paul B. Taylor finds an important alchemical metaphor in the opening of the *General Prologue*: in the context of Nature's "increase of matter," the terms *Zephirus* and *licour* (sometimes used to describe the "product of chemical distillation") allow for the interpretation of the Canterbury pilgrimage as "a rehearsal—*hic et ille*—of the ultimate transformation of matter to spirit, which is the *ultimate* goal of alchemy as well," and the subsequent tales certainly repeat these "themes of purifying transformations."⁷ Indeed, alchemy is a major theme of Chaucer's poetry and merits closer attention in tales outside Fragment 8, and, in particular, the *Franklin's Tale*.

A significant portion of medieval texts in the alchemical *opus* treat the transmutation of base metals into gold or silver as merely metaphor—that is to say, the alchemical quest does not wholly concern *actual* gold in its material, mundane form. The alchemist Petrus Bonus of Ferrara, in his *Pretiosa Margarita Novella* (ca. 1330), believed many books which deal with transformation, such as Ovid's *Metamorphoses*, incorporate the philosophers' stone on the level of metaphor, and, like many books, Ovid's myths prefigured the themes of alchemy.⁸ Monks and mendicant friars—largely responsible for the importation of Greek-Arabian alchemical texts from Moorish Spain into the Latin West—relate the metaphorical aspects of transmutation and the philosophers' stone to biblical allegories on divine wisdom. A closer look at alchemy in the fourteenth century reveals the ways in which "the alchemical elements and processes afforded an allegory of salvation history."⁹ The treatise *De secretis naturae* (On the Secrets of Nature) of Pseudo-Arnald of Villanova, an authoritative text that Chaucer quotes from in the *Canon's Yeoman's Tale*, compares the philosophers' stone to the passion and burial of Christ. As the fourteenth-century Franciscan John of Rupescissa (Jean de Roquetaillade) reiterates: "Et magister Arnoldus dixit, quod lapis est clausus in eo, ut Christus in sepulcro" (And Master Arnold said that the stone was enclosed in [it], as Christ was in the tomb). He adds, "Et secundum conceptionem et generationem et nativitatem et passionem Christi potest comprehensi elixir mercurium et predicta prophetarum potest Christi comparari" (Our elixir can be understood according to the conception, generation, nativity, and passion of Christ, and can be compared to Christ in regard to the sayings of the prophets).¹⁰

In the context of the *Canon's Yeoman's Tale's* enigmatic ending and references to Christ and the Christian God, Jacqueline Tasioulas puts forth, "the [tale's] prohibition serves to glorify it [alchemy] as God

himself becomes the Great Alchemist, withholding his secrets, but with the eternal promise of enlightenment to a chosen few, 'where it liketh to his deitee / Men for t'enspire' (1469–70)."¹¹ In fact, the tale's ending promulgates the "donum Dei" (gift of God) motif of Arabic alchemical tracts, but this borrowing is somewhat obscured by the brilliance of Chaucer's satirical hand.¹² Interestingly, George R. Keiser makes the careful observation that "in the history of these readings, past and present readers have found assurances in these [concluding] lines for the views of alchemy that have prevailed in their own worlds."¹³ Regardless of alchemy's status in the poem, whatever it may be, critics have generally acknowledged a development in the character of the Yeoman by the tale's conclusion—that is, he is seen to emerge at the end as someone different from who he was in the prologue. While the Yeoman's confession largely addresses literal and technical aspects of the science, his constant reflections on alchemy, I believe, catalyze his inner motions toward self-reform. Indeed, the Yeoman's final revelation to "lete it goon" (VIII.1475) is strikingly Boethian, positioning *true* alchemy as wisdom "on the level of philosophy . . . of deepest insight and purpose."¹⁴

Critical scholarship on the *Franklin's Tale* tends toward division into two radically divergent camps. Ironic interpretations typically place emphasis on Arveragus's hypocrisy and Dorigen's marginalization within a male-dominated society as a case for socioeconomic satire. On the other hand, a more literal reading of the tale, though not entirely unproblematic, regards the various character transformations in the moral landscape of the tale as a positive outcome for the story as a whole.¹⁵ I will argue that transformative action in the poem in many ways evokes *transmutation*, another category of *magyk natureel*. Chaucer shows an interest in both psychological and philosophico-physical "transmutation," and he borrows from a distinctive tradition of alchemical texts to articulate this dual phenomenon of both exterior and interior change. The transmutation of black matter, the poem's lunar observations, mingled with solar imagery, and Chaucer's well-established alchemical lexicon support an alternative, allegorical interpretation of the poem, especially as it relates to the tale's concluding revelations of *gentil* conduct. A straightforward reading of the clerk's astrological activities can perhaps, at best, only conclude that the "issue here is the position of the sun and moon."¹⁶ However, it is no coincidence that the most famous alchemical poem of the Middle Ages, the *Epistola solis ad lunam crescentem* (the Sun's Letter to the Waxing Moon)—Chaucer's "book Senior" of the *Canon's Yeoman's Tale* (VIII.1450)—is *wholly* concerned with the planetary alignment of the masculine Sun with the feminine Moon within an allegory of love. In the

Franklin's Tale, these two celestial bodies are not only prominent figures in Aurelius's prayer but are also a central focus of the clerk's actions.

The allegorical coupling/conjunction of the sun and moon and its effect on dark matter has been closely tied to medieval alchemy. Chaucer's contemporary, the English poet John Lydgate from the monastery at Bury St Edmund's, articulates the common belief that the philosophers' stone embodies the sun and moon: the stone is "lyk the sonne / stremyd in his kynde, / Gold tressyd... The Citren Colour for the sonne bryght, / Whyte for the moone that shyneth al the nyght" (lines 1002–8).¹⁷ It is indeed significant that the Franklin repeatedly associates the Breton stone with solar imagery and the operations of the moon: this controlling motif dates back to alchemical traditions that relate the philosophers' stone to the twin bodies of the sun (gold) and moon (silver), *decknamen* (code words) for the chemical combination of mercury and sulfur in an alchemical bath of seawater. In Chaucer's tale, Aurelius's brother resolves, "that if I myghte / At Orliens som oold felawe yfynde / That hadde thise moones mansions in mynde" (v.1152–4). The brothers then meet a clerk who "knew ful weel the moones mansioun" (v.1289). He acquires this special knowledge from a book on the moon:

Which book spak muchel of the operaciouns
 Touchynge the eighte and twenty mansiouns
 That longen to the moone

(v.1129–31)

In fact, the thirteenth-century alchemist Constantine of Pisa wrote *precisely* such a lunar book: close examination of the moon's operations, Constantine argued, is central to alchemical theory and practice. As we shall see, the thread of alchemical imagery enriches the poem with the potential for allegorical interpretation, especially as it relates to the alchemical quest for God's wisdom and grace. Finally, these underlying features of transmutation inevitably deepen with the tale's instances of deception and illusion (analogous to the practice of "false" alchemy), which, perhaps with a tinge of irony, precipitate the triple revelations at the poem's conclusion.

Alchemy in Medieval Europe

By the fourteenth century, alchemy had matured into a richly complex philosophy. Some of the earliest records of chemical practices pertaining to the "transmutation" of baser metals appears in papyri from the third and fourth centuries known as *Leidensis* and *Holmiensis* (i.e., now located

in Leyden and Stockholm), which contain Egyptian recipes for the manufacture of genuine (and fraudulent) gold and silver.¹⁸ Discovered almost two centuries ago, these papyri provide us with a glimpse of the chemical processes undertaken in the workshops of Hellenistic Alexandria. However, the highly abstract and aesthetic imagery of Chaucer's alchemy, as we see in the *Canon's Yeoman's Tale*, is directly inherited from the Islamic Golden Age and its medieval Latin imitators. Over the centuries, the Umayyads and their successors, the Abbasids, developed an appetite for classical learning, which is evident in the multitude of eighth-century translations of Greek and Syriac texts into Arabic undertaken at the request of the Caliph al-Rashid at Baghdad. More important, it was the twelfth-century *Reconquista*, which facilitated the transmission of alchemical texts to the Latin West. The turning point was perhaps the reconquest of Toledo in May of 1085, and "at one stroke the Christian world took possession of a civilization."¹⁹

In July of that year, the mosque at Toledo, which contained a vast library collection of Arabic books (the "armaria Arabum"), was quickly converted to a cathedral for the new capital of León and Castile.²⁰ It is here that the famous translation school was established with the help of Don Raimundo (AD 1126–51), the Archbishop of Toledo. The college conscripted Mozarabs and Jews to translate Arabic texts into Castilian or Catalan, and, from these intermediary texts, a monk would then render a Latin translation. In 1141, Peter the Venerable, the abbot of Cluny, requested Robert of Ketton, who was studying astronomy with his friend Herman the Dalmatian in northern Spain, to translate the Koran into Latin. A year later, Robert undertook the first Latin translation of an alchemical treatise, *De compositione alchemiae* (On the Composition of Alchemy) of Morienus Romanus (completed on February 11, 1144), before returning to London in 1147. The Lombard Gerard of Cremona (ca. 1114–87), another prolific translator, worked in Toledo alongside his Mozarab assistant named "Galippus." Together, they were able to translate at least 76 works, including Aristotle's *Meteorologica* (Meteorology) and al-Razi's *De aluminibus et salibus* (On Alums and Salts), another influential alchemical text transmitted to the Latin West. By the end of the 1100s, literally scores of alchemical treatises were already translated into Latin.

By the end of the thirteenth century, alchemy was already firmly entrenched in Scholasticism and had caught the attention of well-regarded compilers, such as Bartholomew the Englishman and Vincent of Beauvais. Although the science was not an integral part of the university curriculum, virtually all writers on alchemy were university graduates. Hence, "a large number of the texts open with a characteristically Scholastic

debate on the veracity of the alchemical art.”²¹ A rigorous, scholastic handling of alchemy can be seen, for example, in the work of the Latin-Geber, author of the highly influential *Summa perfectionis*, and in the writings of Roger Bacon, who even wrote letters to the Pope promoting the study of alchemy in the university curriculum. Other schoolmen who also write about alchemy in this period include Albertus Magnus, the *Doctor Universalis* who joined the Dominican Order at Padua in 1223, and his pupil, Thomas Aquinas, who later joined him in Cologne.

A medieval alchemist inevitably considers the process of transmutation on various literal and abstractive levels. The usage of figurative and allegorical language was typical among writers on alchemy, which supports the claim that alchemy was “as much a textual and hermeneutic discipline as a scientific and experimental one.”²² While alchemy deals with the physical transmutation of base metals into silver or gold, “beginning around 1300, alchemical texts come more and more to appropriate the mode and manner of religious discourse.”²³ Dominican and Franciscan friars—the preponderance of fourteenth-century writers on alchemy in the Latin West—attempted to reconcile the mystical tone of alchemy with Christian doctrine, using alchemical terms as a means of illuminating the Trinity, transubstantiation, and the miracles of Christ. Of course, the mendicant vow of absolute poverty conflicted with the alchemical quest for gold, which is often motivated by greed. However, the friars reinterpreted the aims of alchemy in order to incorporate the science into a Christian scheme. In a similar vein, Robert Epstein has demonstrated how

Fraternal scholars were naturally interested in questions of profit and usury, but given their mostly urban origins, they also had some understanding of commercial practices and the practical uses of money, and they “formulated an ethic that justified the principal activities of the dominant groups in urban society.”²⁴

Thus, an elaborate network of alchemical metaphors infiltrated fraternal spiritual literature, which incorporated alchemy into its stylistic focus on affective piety, such as the meditations on Christ’s Passion. By way of example, the pseudo-Arnoldian *De secretis naturae* draws attention to the physical beatings and scourges inflicted on the body of Christ, a veiled allegory for the pounding of matter in order to extract the volatile substance.²⁵ Pseudo-Arnald’s allegorical language, such as in the *Parabola*e and *Exempla*, undoubtedly influenced John of Rupescissa, who draws attention to Pseudo-Arnald’s mercury-Christ analogy in his *De confectio*ne *veri lapidis philosophorum*:

Master Arnald says that it is necessary to raise up the Son of Man in the air by means of the cross, which in literal terms means that the material that was digested in the third operation, after being ground finely, is put at the bottom of a flask to be dissolved, and the purest and most spirituous of what is there is then turned upwards into the air, and is raised up in the cross of the head of the alembic, like Christ, as Master Arnald says, was raised up on the cross.²⁶

The friars, therefore, made use of alchemical imagery that was amenable to their writing. According to Jennifer L. Sisk, “Medieval alchemists and writers of alchemical treatises understood their discipline as an endeavor devoted to the improvement of created matter, a purification from defilement not unlike Christ’s redemption of fallen humanity.”²⁷

The notion of spiritual alchemy—the idea of gaining wisdom from God—links the process of transmutation in metals to revelation in human beings and is very likely borrowed from the accounts of Morienus Romanus, a Greek-speaking Christian who counseled the Arab prince Khālid concerning the practice of alchemy. Robert of Ketton translated this influential Arabic text into Latin, entitled *De compositione alchemiae* (On the Composition of Alchemy), which claimed to be the first translation of an alchemical work into Latin in 1144. The story is based on historical fact, as Khālid escaped political turmoil and murder in 682 following the death of his brother, whom Khālid would have succeeded as caliphate. Living now in exile, Khālid sought the wisdom of Morienus Romanus, who reportedly had sent large amounts of gold every year to Jerusalem while living as a Christian recluse in the mountains of Jerusalem.²⁸ After Khālid finally tracked down Morienus, he then sat with him twice a year, inquiring about the customs and history of the Greek people (confusingly, Morienus is from the Byzantine or Eastern Roman Empire but seen, mistakenly, as a Roman Christian by Latin copyists as a result of the mistranslation of the Arabic *ar-Rumi*). Khālid, however, deliberately omitted the topic concerning his magistry. Later in the text, Morienus finally disclosed to Khālid the secret location of the philosophers’ stone within the context of the human soul:

Dixit Calid rex: “Dic michi locum huius rei et suam mineram, ubi invenitur et ubi queritur cum fuerit necesse.” Obmutuit vero Morienus et oculis in terra defixis diu cogitavit. Et postea caput suum erexit et dixit: “Verum est quod ista res sit ea que magis in te fixa a deo creatur, et ubicumque fueris, semper tecum inseparata manet, et omnis a deo creatus, a quo hec res separatur, morietur.” Dixit rex Calid: “Auge michi super hanc rem istam expositionem”. . . . Dixit Morienus: “Quid tibi multa referam? Hec enim res ex te extrahitur et tu illius minera existis et apud te illam

inveniunt et vere ex te excipiunt, et post eius probationem augebitur eius amor in te. Intende hoc et scies hoc verum esse.” Dixit rex Calid: “Novisti alium lapidem qui huic lapidi assimilatur et cuius potentia hoc idem possit perfici?” . . .Dixit Morienus: “Non novi alium lapidem qui ei assimiletur neque qui eius habet effectum. Quia in hoc lapide sunt .iiii. elementa, et mundo assimilatur et mundi compositioni. Nec reperitur in mundo lapis alius qui huic assimiletur in effectu sive in natura.”

(King Khālid said: “Tell me where the sources of this thing are, whence it may be gathered as there is need of it.” But Morienus fell silent and, casting his gaze downward, reflected deeply for some time. Then he raised his head and spoke: “Truly, this matter is that created by God which is firmly captive within you yourself, inseparable from you, wherever you be, and any creature of God deprived of it will die.” King Khālid said: “Give me further explanation in this matter.” . . .Morienus said: “What more can I tell you? For this matter comes from you, who are yourself its source, where it is found and whence it is taken, and when you see this, your zeal for it will increase. Consider this, and you will find that it is true.” King Khālid said: “Is any other stone like this one known to you, by the power of which the same may be accomplished?” . . .Morienus replied: “I know no other stone like it nor having its powers. While the four elements are contained in this stone, it being thus like the world in composition, yet no other stone like it in power or nature is found in the world.”)²⁹

Significantly, friars used the figure of the Roman Christian Morienus in the *De compositione alchemiae* in order to reclaim alchemy as Christian knowledge. In fact, manuscripts of the thirteenth and fourteenth centuries underwent a process of textual revision, particularly the “monkish expansion upon Morienus’ Christianity.”³⁰ As Lee Stavenhagen clarifies in his critical edition of the text,

The author of the last Latin revision expanded on the Christian tradition connected with Adfar-Stephanos and Morienus to produce a story claiming, in effect, that alchemy was originally a Christian doctrine which had at last been delivered from its Babylonian captivity by the pious translator Robert of Ketton, famed interpreter of Islamic scripture. . . . it was converted into a testament to the claim that alchemy had been practiced by Christian adepts long before passing into Islamic hands, and attention therefore centered also around the legend, which needed considerable underpinning, that it was the first Latin document of the art.³¹

It is arguable that Franciscan and Dominican friars reinvigorated the alchemical discussion of revelation and the wisdom from God, which I shall say more about later, linking it to salvation theology in the Christian tradition.

In more scientific terms, Robert P. Multhauf, in his examination of the writings of Roger Bacon and Albertus Magnus, concluded that “Both speak of two kinds of alchemy, one concerned with gold-making and the other with changes in ‘things’ as a general problem.”³² In the realm of the transformative arts, alchemists considered whether or not alchemy had the power to transform *species* and/or add new substantial forms to baser metals. As David C. Lindberg opines,

It is difficult to imagine how people who lacked our knowledge of plant and animal physiology could have *doubted* the reality of transmutation. Consider the case of a plant or tree, which transforms water and soil nutrients into a delicate blossom or succulent fruit; or the even more extraordinary case of a lamb, which has the ability to convert water and grass into wool and flesh. The transformation of one metal into another seems, by comparison, a considerably less challenging feat.³³

However, there was nonetheless a strongly felt need to incorporate the science of alchemy into an Aristotelian framework. Specifically, the possible occurrence of alchemy’s transmutations in the laboratory required that the discipline conform to the medieval doctrine of matter and form. Avicenna’s *De congelatione et conglutinatione lapidum* (On the Solidification and Conglomeration of Stones) argued against the possibility of any real transmutation in alchemy, *unless* the raw material was first reduced to primary matter (*prima materia*). In fact, Latin translations of Avicenna’s text (famously misattributed to Aristotle) added this crucial phrase to his work, insisting that transmutation was only possible if metals were first reduced to mercury, their primary matter. It seemed far more plausible, then, that an alchemist would, therefore, avoid the difficult task of transmuting fundamental interior qualities but instead “strip off transient accidents and replace them with equally superficial ones.”³⁴ In the end, opponents adopted a more general stance by flatly denying alchemists the power to introduce new forms into matter. Still, alchemical writers successfully integrated the transformative art into an Aristotelian framework, which explains, in part, why opponents struggled to discredit alchemy on a purely theoretical basis.

Attacking alchemical *practice*, however, proved effective. By the fourteenth century, mendicant orders, striving to curb an attraction to alchemy among Dominican and Franciscan friars, embarked upon a kind of advertising campaign, promulgating the stereotype that alchemy “deludes its practitioners, whose motivating force is avarice, by wasting their goods and making them deceivers.”³⁵ Indeed, the chantry priest of the *Canon’s Yeoman’s Tale* is duped by the Canon, who takes advantage of his ardent

desire for money and riches and sells him a bogus recipe for the philosophers' stone. His greed is also evident by the fact that he makes his living by singing Masses for the dead as an "annueleer" (VIII.1012) in London. In other words, he participates in what Carl Phelpstead and others have identified as an "economy of salvation . . . and the way in which praying for the dead ensured that 'The medieval view of the afterlife became 'transactional,' founded upon a covenant between the living and the dead.'"³⁶ I want to suggest here that alchemy also figured into this economic model. In fact, friars practiced alchemical gold making precisely in order to "purchase" more life-years on earth. By way of example, the fourteenth-century Franciscan John of Rupescissa, known for his Joachite prophecies, directly sought the elixir of alchemy—Chaucer's "elixir cleft" (VIII.863)—in order to prolong his life and prepare for humanity's impending fight with the Antichrist during the time of tribulation. In theory, the eventual defeat of the False Prophet, led by an elite group of mendicant alchemists, would be followed by an even better world on earth for the next thousand years. Leah DeVun's careful study of John's eschatological writings draws attention to the text of *De quinta essentia*, which articulates alchemical medicines for extending human life because "healthier and longer-lived evangelical preachers would presumably be more formidable allies of the church and adversaries of Antichrist."³⁷

Rupescissa's prophetic visions and critique of clerical excesses inevitably resulted in his arrest in 1344, followed by his lifelong imprisonment. Even so, the historian Will H. L. Ogrinc has shown that

*the Church has never persecuted alchemists as such but only because they practised magic, which is alien to serious alchemy, or because they ventilated their criticism of contemporary society and of the secularization of the Church. . . . there are scarcely any alchemistic treatises extant which contradict official church dogma.*³⁸

Similarly, Chaucer's *Canon's Yeoman's Tale* does not attack the theory of alchemy *per se*. The narrator clarifies to his audience of "worshipful chanoons religious" (VIII.992) that the recital of his tale, which condemns a false Canon, "Ne demeth nat that I sclandre youre hous, / Although that my tale of a chanoun bee" (VIII.993–4). In other words, the existence of one rotten Canon does not necessitate that *all* Canons are therefore damned. By this logic, Chaucer's audience is not encouraged to condemn the science of alchemy on the basis of *one* false alchemist, for "Of every ordre som shrewe is, pardee" (VIII.995). By the same token, Chaucer's scurrilous tale of a contemptible friar does not suggest that the poet meant to generalize this antifraternalism to *all* friars.

Skepticism among a few learned authorities, mingled with our present-day knowledge of inorganic chemistry, should not distract from the fact that belief in alchemical transmutation was prevalent in medieval Europe, with a number of prominent schoolmen among its ranks. Indeed, even monarchs, including Edward III, Robert Bruce of Scotland, Charles VI, and Henry VI, patronized alchemy (albeit for their own personal gain). Edward III is known to have made efforts to protect a number of alchemists in his court. According to legend, the English king ordered the Franciscan Ramon Llull to make large quantities of alchemical gold in order to finance his crusade against the Saracens, but Edward then used this money to wage war against the French.³⁹ In fact, a Patent Roll makes clear that Edward III desired to use alchemy for the production of silver. Throughout the Hundred Years' War and the War of the Roses, alchemy was also used to gain an advantage in warfare. Henry VI of England ordered his priests to stockpile his treasury with gold and silver by means of alchemy, for the transmutation of base metals into gold was, according to the English monarch, not unlike the changing of bread and wine into the blood and body of Christ during holy mass. In other words, the English king wished to "use alchemy as a strategic weapon in his campaign against France."⁴⁰

While the church presented alchemy as a moral problem for individuals, on a more profane level, the economic threat alchemy (or rather *faux-alchemy*) posed to official currencies in Europe was the prime motivation for sharp criticisms among clerical authorities. In 1317, the Avignon pope John XXII issued a papal decretal against the *falsarii* (counterfeiters), those who "pretend to make genuine gold and silver by a sophistic transmutation," thus ordering a punishment for those who "counterfeit money from alchemic gold or silver."⁴¹ The rising circulation of counterfeit money and the looming threat of inflation compelled the Pope to target falsifiers who "stamp upon the base metal the characters of public money for believing eyes." On the other hand, Pope John allegedly gave money to the bishop of Cavaillon, a physician, to purchase an alembic in order to make "a certain secret work," which Thorndike thinks "sounds very much like an elixir of life, if not an attempt to make gold."⁴² At this time, Dante Alighieri is composing the *Divina Commedia*. In cantos 24 and 30 of the *Inferno*, Dante makes little distinction between Italy's counterfeiters and its *charlatan* alchemists (nature's apes), whom he appropriately places right next to each other within the tenth chasm of the eighth circle of hell. However, a number of fourteenth-century commentaries on the *Commedia* clarify that Dante distinguishes between false alchemy (counterfeiting) and true alchemy (a veritable art). The anonymous author of *Lottimo commento* "distinguishes two kinds of alchemy, one is legitimate,

the other not . . . the desire to castigate its abuses with the attendant deceit does not mean that its fundamental scientific principles are considered to be invalid.⁴³ Other commentators on the *Inferno* in this period also make this subtle but important distinction. For example, Benvenuto de Rambaldis da Imola clarifies in his *Comentum super Dantis* that alchemists are not committing a sin when they desire to improve an imperfection in baser metals.⁴⁴ Of course, Dante is primarily attacking *counterfeiters* who, motivated by avarice, deceive others for material gain.

In 1344, when gold coinage was first brought into circulation in England, rampant counterfeiting swiftly ensued, and Edward III reacted quickly by declaring it high treason in 1352.⁴⁵ Henry IV then banned alchemy in 1403, allegedly “for fear of the effect it would have on the national economy should even a fraction of its practitioners succeed.”⁴⁶ In *The Necessity of the Art of the Arts* (i.e., the *Elixir*), the tenth-century alchemist Al-Fārābī insisted on the safeguarding of alchemy’s secrets “on the grounds that unrestricted knowledge of gold making would destroy economies—a common fear throughout most of alchemy’s history.”⁴⁷ The problems related to these forms of forgery are also evident in Chaucer’s fictional texts. In the *House of Fame*, “Geffrey” the narrator praises the purity of Fame’s gold, which is “as fyn as ducat in Venyse” (1348). It is likely that the Ruling Council of the Republic of Venice banned alchemical practices precisely in order to ensure its reputation for the purity of Venetian coins in circulation. Venice’s purported reputation for making superior coins of gold “that nas nothyng wikke” (1346) serves as a comic foil for Geffrey’s complaint that these ducats are perhaps of a quality “of which to lite al in my pouch is” (1349). In other words, we can assume that Geffrey’s English coins (as opposed to the Venetian ducats of pure gold) are in fact debased with cheaper metals. A counterfeit half noble in circulation during Richard II’s reign, in fact, survives in the Fitzwilliam Museum, Cambridge. It was made by covering a base metal with a thin layer of gold and then stamping it with false dies.⁴⁸ Counterfeit coinage was undoubtedly a major concern for Chaucer, who had the arduous task of collecting and recording customs and subsidy payments for the crown while employed as Controller of Customs in London. An explicit reference to counterfeit gold, in fact, occurs in the Clerk’s performance immediately preceding the envoy to the *Clerk’s Tale*:

But o word, lordynges, herkneth er I go:
 It were ful hard to fynde now-a-dayes
 In al a toun Grisildis thre or two;
 For if that they were put to swiche assayes,

The gold of hem hath now so badde alayes
 With bras, that thogh the coyne be fair at ye,
 It wolde rather breste a-two than plye.

(iv.1163–9)

The Riverside Chaucer mentions James Dean’s view that the analogy of contemporary wives to counterfeit “gold” (an alloy primarily consisting of “brass”) alludes to the decline of the Golden Age.⁴⁹ Nevertheless, a more straightforward reading of this passage identifies the contemporary prevalence of counterfeit gold with the rising tide of false alchemists in fourteenth-century England. Rather than pursuing a veritable art, greedy *faux*-alchemists inundated the money supply with ersatz coinage, which “wolde rather breste a-two than plye.” In other words, the false alchemists “now-a-dayes” in English towns have managed to flood local economies with counterfeit gold (i.e., “coyne” of “badde alayes”). Moreover, the Oxford Clerk’s concluding remarks on Griselda and the description of the Oxford Clerk in the *General Prologue* are, in fact, directly linked by alchemy. The narrator says,

But al be that he [the Clerk] was a philosophre,
 Yet hadde he but litel gold in cofre.

(i.297–8)



Figure 3.1 A silver groat from the reign of Edward III (AD 1327–77) with an inner legend that says “Civitas London” (left side), indicating that it was struck at the London mint. The coin has been clipped on the edges for its precious metal use while keeping the design intact for its future use. Image taken from author’s personal collection.

As Warren S. Ginsberg notes in the *Riverside Chaucer*, the pun on Chaucer's meaning of the word "philosophre" as alchemist is one of the few Chaucerian puns Robinson accepts as intentional. Like the philosopher of Oxford, aspiring alchemists "in al a toun" are equally unsuccessful in transmuting base metals into pure gold, but some, however, trick believing eyes into thinking they have at last discovered the secret of secrets with coinage "fair at ye." Like an alchemist's attempts to "assay" a coin's precious metal, Griselda, too, "As wel as evere womman was assayed" (iv.1054) (figure 3.1).

Beyond rising inflation and the potential for economic meltdown, alchemy promised financial ruin for gullible individuals investing large sums of money in an addictive science, which would, of course, inevitably fail. Pseudo-Arnald of Villanova's *De secretis naturae*, a text Chaucer quotes from, warns that the philosopher "should have sufficient wherewithal (*expensas*) to keep him going at least two years. . . . *expensas* are necessary in order to avoid an incomplete work and the loss of all," and Pseudo-Geber's *Sum of Perfection* cautions, "this science agrees not well with a man poor and indigent, but is rather inimical and adverse to him."⁵⁰ In the *Canon's Yeoman's Tale*, the sarcastic Yeoman chides the shortsightedness of aspirant alchemists blind to their financial vulnerability:

Whoso that listeth outen his folie,
 Lat hym come forth and lerne multiplie;
 And every man that oght hath in his cofre,
 Lat hym appiere and wexe a *philosophre*.

(viii.834–7, emphasis mine)

Soon enough, the Yeoman is more direct and warns his audience against the dangers of alchemy. He articulates how an alchemist's addiction to his craft inevitably empties his coffers "And empten also grete and hevye purses" (viii.1404). The familiar image of the indebted, poor, and threadbare alchemist is almost synonymous with the art itself. Not surprisingly, Chaucer relishes the sublime irony of this medieval joke. The "philosophre" relinquishes all his gold in order to purchase baser metals for his alchemical experiments. In effect, he substitutes his gold for useless powder, even when the main purpose is to manufacture (not destroy) gold for his coffers. In the end, "It wole us maken beggers atte laste." (viii.683).

Chaucer never fails to repeat variations of a good joke or comic pun, as evidenced by his repertoire of farting jokes in the *Summoner's Tale*, the *House of Fame*, and the *Miller's Tale*. Similarly, and with great artistic skill, Chaucer revives the ironic description of the clerkly "philosophre" from Oxford. In fact, alchemical puns—triggered by the proximate alchemical

lexicon of “gold,” “cofre,” and “philosophre”—resurface again later in the *Canterbury Tales* when another indebted nobleman ends up with “litel gold in cofre” after he purchases an illusion from a “philosophre”:

With herte soor he gooth unto his cofre,
 And broghte gold unto this philosophre,
 The value of fyve hundred pound, I gesse.

(v.1571–3)

The “philosophre” mentioned in the above quotation is neither the Clerk of Oxford nor the London alchemist of the *Canon Yeoman’s Tale*, as we might expect. It is the Orléans clerk of the *Franklin’s Tale*. As W. Bryant Bachman Jr. points out, this enigmatic character is “a clerk–magician who, curiously, is more than once referred to as a ‘philosophre’ (1561, 1572, 1607).”⁵¹ Whereas Bachman’s observation supports his argument for a Boethian reading of the tale, the term “philosophre,” I will argue, clearly implies Chaucer’s specific use of the word to denote an alchemist. Grennen has rightly noted, “the word ‘philosophre’ is a well-established equivoque.”⁵² In the *Canon’s Yeoman’s Tale*, the word “alkmystre,” is, surprisingly, used only one time throughout the whole tale, whereas the word “philosophre” is used to denote an alchemist a total of eight times in the tale. Chaucer *again* repeats this alchemical pun in the *Franklin’s Tale* with Aurelius’s painful recognition that he must procure “Of pured gold a thousand pound of wighte / Unto this philosophre!” (v.1560–1). It is significant that Chaucer consistently calls the Orléans clerk of the *Franklin’s Tale* a “philosophre” in specific proximity to the words “gold” and “cofre,” evoking a lexical association with the alchemical arts. The repetition of “philosophre” and “gold” within the same sentence registers alchemical meaning, as clearly seen in table 3.1 below.

But more to the point, the alchemical joke suggests that the Orléans philosopher resembles an alchemist, doubtless because of his unique power to transmute substance and/or *species* and thus bring about an illusion. Ironically, the black rocks literally *are* replaced by gold, and the alchemist indeed acquires *real* gold at the tale’s conclusion! Through the medium of the heavy Breton “stone” (v.996), the “philosophre” of the *Franklin’s Tale* literally and figuratively transmutes a visual experience into “pured gold a thousand pound of wighte” (v.1560). I suggest a literal reading of the transformation: the philosopher transmutes the actual weight of stone into the weight of gold. At the more abstract level, Aurelius employs the Orléans “philosophre” to manipulate this “stone” and transmute the black rocks, the “foul confusion” (v.869)—alchemy’s dead mass of first matter, the *materia prima* (hyle), which in Chaucer’s time was the color black. A

Table 3.1 The lexical and syntactic significance of “gold,” “cofre,” and “philosophre”: perhaps Chaucer’s most frequent and sophisticated pun, unique and central to Chaucer’s alchemy

CHAUCER’S ALCHEMICAL LEXICON

But al be that he [the Clerk] was a *philosophre*,

Yet hadde he but litel *gold* in *cofre*

General Prologue, 1.297–8, emphasis mine.

And every man that oght hath in his *cofre*,

Lat hym appiere and wexe a *philosophre*.

The Canon’s Yeoman’s Tale, VIII.834–7.

With herte soor he gooth unto his *cofre*,

And broghte *gold* unto this *philosophre*,

The value of fyve hundred pound, I gesse,

The Franklin’s Tale, v.1571–3.

“Allas!” quod he. “Allas, that I bihighte

Of *pured gold* a thousand pound of wighte

Unto this *philosophre*! How shal I do?”

The Franklin’s Tale, v.1559–61.

Wel kan Senec and many a *philosophre*,

Biwaillen tyme moore than *gold* in *cofre*;

The Man of Law’s Prologue, 11.25–6.

literal reading of the tale at least acknowledges that the black rocks are replaced with *material* substance of even greater value (“pured gold”), which finally emerges before the Orléans “philosophre.” From a comic perspective, the protrusions of black earth, the philosopher’s raw material, undergo a chemical transformation. Aurelius, who serves as a catalyst in the chemical process, apportions exactly five hundred pounds of gold from his own coffers and bequeaths it to the alchemist. In reverse irony, the clerk’s performance constitutes an illusion while the resultant “pured gold” is indeed genuine, *real* gold (as opposed to counterfeit gold).⁵³

After Aurelius proclaims his love, Dorigen’s conditions for Aurelius are plainly articulated (albeit in jest):

I seye, whan ye han maad the coost so clene
 Of rokkes that ther nys no stoon ysene,
 Thanne wol I love yow best of any man;
 Have heer my trouthe, in al that evere I kan.

(v.995–8)

Dorigen, of course, believes this possibility “is agayns the proces of nature” (v.1345) and Aurelius rightfully thinks “this were an impossible!” (v.1009). His impossible task is to “remoeve alle the rokkes, stoon by stoon” (v.993). Although Dorigen speaks in jest, Aurelius interprets the “stoon” off the coast of Brittany as the only true catalyst for and obstacle to Dorigen’s love. The Breton stone is internalized as a catalyst—a philosophers’ stone—that brings about transmutation on various literal and abstract levels. As we shall see, medieval imagery of the “philosophres stoon” (CYT, VIII.862), as observed in Chaucer’s reading of alchemical treatises—notably, those we find explicitly quoted in the *Canon’s Yeoman’s Tale*—allow Chaucer’s audience to interpret the Breton stone as the philosophers’ stone. Chaucer here elicits the mystical and allegorical meaning of the *Lapis Philosophicus*. Like the philosophers’ stone, the black rocks change everything around them. At some point, the weighty Breton stone disappears from sight, which eventually signals Aurelius to replenish this bulk with “pured gold a thousand pound of wighte / Unto this philosophre.” Although the Orléans philosopher conjures the *illusion* of transmutation, the Breton “stoon,” I will argue, functions as a sign for the “philosophres stoon.”

As J. S. P. Tatlock and Germaine Dempster argue in the *Sources and Analogues*, Chaucer uses Geoffrey of Monmouth’s *History of the Kings of Britain* as a direct source for the *Franklin’s Tale*.⁵⁴ Like the Orléans clerk who removes the black rocks, Geoffrey relates a story of Merlin the magician who brings the heavy rocks from Ireland to Mount Ambrius at the request of Aurelius Ambrosius. More important, the historian Jonathan Hughes notes in a recent book how Merlin was often figured as an alchemist by readers of the later Middle Ages: “Merlin, steeped in knowledge of the mysteries of nature, came to be regarded in the fourteenth and fifteenth centuries as an alchemist (a number of alchemical works were ascribed to him) and as guardian and advisor to the young Arthur.”⁵⁵ In other words, Chaucer uses the *History* as a source for the removal of the rocks in order to link the Orléans “philosophre” to Merlin the alchemist, one who both understands and manipulates the forces of nature. It is also worth noting that a number of legal writers and lawyers in this period, like the law student at Orléans, are also intrigued by alchemy. William R. Newman notes the fourteenth-century canonist Oldrado da Ponte who composed a well-known *consilium* defending the sale of alchemical gold, and “His views were adapted by an impressive list of legal authorities.”⁵⁶ In fact, alchemy’s allure among students made its way into the *Chartularium* of the University of Paris.⁵⁷ In the *Franklin’s Tale*, the presence of the *philosophre* and his *pseudo*-transmutation of the Breton rocks extends beyond mere comedy and, on a more profound level, enriches the poem with figurative and allegorical meaning.

Similarities to the *Canon's Yeoman's Tale*

Before we consider the *Franklin's Tale* as it stands alone, it is once more worth drawing comparison with the *Canon's Yeoman's Tale*. First, the lexical parallel of “gold,” “philosophre,” and “cofre” sets up the astrologer-clerk of the *Franklin's Tale* as a suitable foil for the deceptive alchemist—Canon, a comparison that merits critical attention. Secondly, Chaucer thematically links the two tales of the Franklin and the Canon's Yeoman as part of his discussion of the problematic nature of illusion, material change, and the dangers of deception. Carolyn Collette anticipates this comparison in her observation that Chaucer's repeated stress on the deception of sight explains “why in some manuscripts this tale [the *Franklin's Tale*] in Fragment F immediately precedes Fragment G, the *Second Nun's Tale* and the *Canon's Yeoman's Tale*.”⁵⁸ It is not merely fortuitous, I think, that the *Franklin's Tale* is proximate to the *Canon's Yeoman's Tale*. There are of course many similarities between characterizations and motifs that run in both tales, but more to the point, the *Canon's Yeoman's Tale* can significantly illumine the medieval topic of alchemy in the *Franklin's Tale*.

The Orléans clerk and the *faux*-scientist Canon surely invite comparison. First, both characters stage a theatrical performance involving astrology and alchemy, respectively—in fact, the language of alchemy and astrology, we shall find, appears in *both* tales but with unequal emphasis—and the two clerks employ the tactics of deception in order to manufacture an illusion. The Yeoman expatiates on the Canon unabashedly deceiving the gullible priest and concedes, “Too muchel folk we doon illusioun” (viii.673). Similarly, the Orléans philosopher of the *Franklin's Tale* adheres to the same idea, “This is to seye, to maken illusioun, / By swich an apparence or jogelrye” (v.1264). Moreover, the Franklin reminds us that “hooly chirches feith in oure bileve / Ne suffreth noon illusioun us to greve” (v.1133–4), drawing our attention to the dubious nature of “swiche illusiouns and swiche meschaunces / As hethen folk useden in thilke dayes” (v.1292–3). The narrators of both tales are obligated to openly condemn such illusions and false appearances intended to deceive the ignorant observer. The Canon *blinds* the priest (“to blynde with this preest,” viii.1151) in the same way the Orléans philosopher figuratively blinds Aurelius, and, by extension, Dorigen, from seeing the rocks.⁵⁹ Whereas the “feendly” canon (viii.1158) manipulates alchemy as a cover for deceit, the Orléans clerk literally covers the “feendly rokkes blake” (v.868) and, as will become clear, unexpectedly *uncovers* a significant “trouthe” in the process.

Chaucer's emphasis on empirical science and natural (as opposed to supernatural) phenomena distinguishes the Orléans philosopher from

Tebano, the magician of Boccaccio's *Filocolo*, and, instead, parallels the practical illusionist of the *Canon Yeoman's Tale*. Chauncey Wood's argument that Chaucer's astrologer—"magician" simply predicts a high tide supports the critical emphasis on science and deception as the basis for so-called "supernatural" phenomena in the *Franklin's Tale*.⁶⁰ Anthony E. Luengo thinks the Orléans clerk merely fulfills the role of a plain *tregetoure* who uses the elaborate devices of stage magic, such as pageant wagons and mechanical actors, familiar courtly entertainments in Chaucer's day.⁶¹ Similarly, Mary Flowers Braswell believes both magic and illusion in the *Franklin's Tale* reflect Chaucer's knowledge of the highly elaborate machines and mechanical automata of the Middle Ages.⁶² If we entertain these critical interpretations for a moment—that is to say, the idea that Chaucer's characters mistake crafty illusion for wondrous "magic" in the tale—then the mechanical devices, magic shows, and "jogelrye" (v.1265) of the *Franklin's Tale* parallel the ingenious tricks and deceitful "magic shows" in the analogous performance of the Canon.

Chaucer stresses the commercial nature of illusion making, slowly chipping away at "magic" in the *Franklin's Tale*. The magician/clerk, as one critic observes, "transforms himself into a shrewd business man."⁶³ At the very least, both the Orléans philosopher and the Canon are gold-seeking profiteers that fabricate illusions and manipulate the laws of natural science for gain. Indeed, the business of illusion making is lucrative. The Canon sells a fraudulent secret for the stiff price of 40 pounds, and, analogously, the astrologer-clerk sells an illusion for a ruinous one thousand pounds. After the Orléans clerk fulfills his task, the moment for Aurelius's payment to the astrologer arises with frightening consequences:

Aurelius, that his cost hath al forlorn,
 Curseth the tyme that evere he was born:
 "Allas!" quod he. "Allas, that I bihighte
 Of pured gold a thousand pound of wighte
 Unto this philosophre! How shal I do?
 I se namoore but that I am fordo."

(v.1557–62)

Aurelius's inevitable disappointment in the game of illusion making is reminiscent of the Yeoman's attentions to the "lusty game" of transmutation:

Lo! swich a lucre is in this lusty game,
 A mannes myrthe it wol turne unto game,

And empten also grete and hevye purses,
 And maken folk for to purchacen curses
 Of hem that han hir good therto ylent.

(viii.1402–6)

Aurelius will “Curse[n] the tyme” in the same way the Yeoman’s alchemy will “maken folk for to purchacen curses.” Lines 1571–3 and 1557–62 of the *Franklin’s Tale* highlight the fact that Aurelius stakes his entire wealth and aristocratic title on the occult science, and this move certainly resonates with the Yeoman’s sarcastic remark regarding men of wealth attempting to “appiere and wexe a philosopre” by using all the gold in their coffers. In the end, Aurelius—who points out that “Myn heritage moot I nedes selle, / And been a beggere” (v.1563–4)—is reminiscent of the alchemists in the *Canon’s Yeoman’s Tale* who know no limits to what “they wolde hem selle and spenden on this craft” (viii.882). The satisfactions gained from the occult science will “empte his purs and make his wittes thynne” (viii.741). The Yeoman explains,

Yet of that art they kan nat wexen sadde,
 For unto hem it is a bitter sweete—
 So semeth it—for nadde they but a sheete
 Which that they myghte wrappe hem inne a-nyght,
 And a brat to walken inne by daylyght,
 They wolde hem selle and spenden on this craft.

(viii.877–82)

Like the poor alchemist of the *Canon’s Yeoman’s Tale* with only a “brat” to clothe himself, Aurelius of the *Franklin’s Tale* is willing “to goon a-begged in my kirtle bare” (v.1580) in order that his “dette shal be quyrt” (v.1578). While Aurelius ensures the philosopher that “my trouthe wol I kepe” (v.1570), the clerk, too, gives Aurelius “feith to borwe” (v.1234). Chaucer here dramatizes the yielding of economic profit and contractual obligation in exchange for “trouthe” and *gentillesse*.

Interestingly, Chaucer maintains an equal interest in the apprentice: the ways in which the “occult sciences” attract the attentions of young amateurs lacking in the skills and expertise of more professional illusionists (i.e., the Canon or the Orléans clerk). Specifically, the Yeoman’s apprenticeship to the Canon parallels the relation between Aurelius and the Orléans philosopher. Aurelius’s interest in astrological theory is perhaps most noticeable in the fact that he provides specific instructions for the removal of the rocks, as opposed to relying on the wisdom of Apollo for a *modus operandi*.⁶⁴ Before Aurelius even meets the clerk, he betrays

a real fascination with the science, and here “Aurelius, too, is curiously conversant with the details of astronomy and tidal theory that the clerk himself draws upon when he effects the disappearance of the rocks.”⁶⁵ More important, Aurelius and the Orléans clerk are linked by deception. Aurelius intends to deceive Dorigen by simply covering the rocks with water for “thise yeres two,” as opposed to embarking on the Herculean task of removing them, a physical impossibility. When the rocks disappear, Aurelius delivers a long and tedious speech to Dorigen (v.1311–38) recapitulating the terms of their verbal contract. It is significant that he consciously neglects to mention the Orléans clerk or the fact that he received aid from his brother. In other words, Aurelius usurps the role of astrologer and natural magician—that is, from Dorigen’s perspective. In the end, the inherent similarities between the *Canon’s Yeoman’s Tale* and the *Franklin’s Tale* point our attentions to an alchemical reading of the poem, which deepens in the context of Aurelius’s prayer to Apollo, the actions of the Orléans philosopher, and, finally, the disappearance of the black rocks.

Alchemy, Astronomy, and *The Sun’s Letter to the Crescent Moon*

The transformation of the rocks and Aurelius’s prayer to Apollo are two significant events in the poem that depend on “termes of astrologye” (v.1266). Astrology, however, was not entirely an isolated discipline in the Middle Ages, as the two “occult” sciences (astrology and alchemy) often coincided in diction and theory.⁶⁶ In fact, the Englishman Daniel Morley categorizes the field of alchemy as a subdivision of astronomy, which is not always distinguished from medieval astrology, in his thirteenth-century *Philosophia*.⁶⁷ The “termes of astrologye” and the lexicon employed by the “alkamystre” are inextricably linked to one another. It is not surprising that Aurelius’s knowledge of solar and lunar influence in his prayer to Apollo is in part drawn from a widely used alchemical motif. Indeed, alchemists strictly employed the terms of astrology and astronomy as cover-names for the various metals of alchemy. Specifically, gold was replaced with *Sol* or “the sonne,” and silver was replaced with *Lucina*: Chaucer’s Yeoman in fact names the astrological bodies of his craft, “Sol gold is, and Luna silver we threpe” (viii.826) and later “That out of Sol and Luna were ydrawe” (viii.1440). Similarly, Chaucer’s contemporary, the English poet John Gower, notes how “The gold is titled to the Sonne, / The mone of Selver hath his part”:⁶⁸ recall the sun’s association with the metallic “burned gold” in the *Franklin’s Tale*. After Aurelius consults the philosopher, the sun descends into the house of

Capricorn (as opposed to Leo as Aurelius instructs Apollo) in the month of December, at a critical moment before the rocks' transformation (or *faux*-transmutation), and the sun changes hue:

Phebus wax old, and hewed lyk laton,
 That in his hoote declynacion
 Shoon as the burned gold with stremes brighte;
 But now in Capricorn adoun he lighte,
 Where as he shoon ful pale, I dar wel seyn.

(v.1245–9)

The Franklin here maintains the direct alchemical association of the sun with “gold,” and, more importantly, Chaucer, in the voice of the unwitting Franklin, presents us with an alchemical metaphor embedded in the word “laton” (latten). In the *Riverside*, Christine Ryan Hilary mentions Bartholomaeus Anglicus to indicate that latten was “a metal (*auricalcum*) alloy ‘of copper and of tynne and of auripigment and with other metalles’ that has the appearance of gold but not its value or durability.”⁶⁹ Significantly, alchemical texts of the Middle Ages draw special attention to this substance known as *laton* (latten). Morienus Romanus, for example, claims that latten, which he glosses to mean “earth,” can be washed to remove its blackness, turning it into the more desirable color of gold:

Sed laton, i.e. terra, potest substantialiter auferre ab azoc, i.e. argentum vivum, suam albedinem, quia inest eo mirabilis fortitudo que facit omnes colores apparere cum colores fuerunt abluti et que aufert suam nigredinem atque immunditiam et fit album, tunc non propter latonem, qui faciat eum rubeum.

(But *latten*, or earth, can take on the substance of whiteness from quicksilver, which has a marvelous power to cause all the colors to appear after washing, removing blackness and impurity and rendering white, except in the case of *latten*, which reddens it.)

Et dixit Maria quod cum laton, i.e. terra, comburitur cum alkibris, i.e. sulfur, et vertit super eam molliciem donec ruat, i.e. ferueat, vertitur in melius quam non erat nisi cum dei auxilio. Et dixit alius quod cum laton fuerit decoctus donec sit lucidus velud oculi piscium, expecta suum bonum, et quod adhuc vertetur ad suam naturam atque colorem. . . . Et dixit Maria quod nichil est quod possit a latone, i.e. terra, suam umbram, i.e. nigredinem vel suum colorem, auferre, sed azoc est suum tegumentum in primis cum laton decoquitur, nam eum colorat et album reddit, et postea laton vertitur super eum, i.e. azoc, et reddit eum rubeum.

(And Maria said that when *latten*, or earth, is burned with sulfur until it softens and flows or boils, it is turned into something so fine as existed

only by God's aid. And another authority said to look for one's reward when latten has been refined until it shines like fish eyes, for then it has been converted to its basic nature and color. . . . Maria also said that there is nothing which can remove from *latten*, or earth, its darkness, or proper color of blackness, but quicksilver covers it at first, turning it white; then the *latten* overcomes the quicksilver, and reddens it.)

quod azoc, i.e. argentum vivum, et ignis, sc. lapidis, latonem, i.e. terram, abluunt atque mundant et obscuritatem ab eo auferunt.

(quicksilver and fire [of the stone] wash *latten*, or earth, and cleanse it of darkness).⁷⁰

In the *Franklin's Tale*, this metal alloy, "laton," is strictly counterfeit gold and even assumes the same brightness and polish "as the burned gold" (v.1247). Crucially, the Franklin at this point in the narrative is comparing the illusion of removing the rocks (or black earth) to the illusion inherent in the direct perception of fraudulent gold—"laton"—as real, "burned gold." The passage illustrates the same kind of illusion employed in the *Canon's Yeoman's Tale* by the false canon in order to deceive the gullible priest, who is oblivious to the warning, "But al thyng which that shineth as the gold / Nis nat gold, as that I have herd it told" (viii.962–3). In the context of the Franklin's "philosophre" (alchemist) and the poem's anxiety about the surface illusions that mire the ideal of *trouthe* and *gentillesse*, the metaphor of *faux* gold questions our reliance on *a posteriori* knowledge and direct sensory perception to arrive at truth. In any case, the reference to metallic "laton" and "gold" in the context of the planetary sun draws our attention to the relationship between alchemy and astronomy in medieval scientific texts.

I return to planetary alchemy. It was commonplace to discuss the harmony and union of the elements by incorporating the language of astrology. Specifically, the astrological imagery of uniting the sun with the moon was synonymous with alchemical lore. These correspondences between the sun (gold/sulfur) and the moon (silver/mercury) "clearly demonstrate the relationship between alchemy and astrology . . . alchemy teaches that the metals were generated in the dark womb of the earth under the influence of the seven planets."⁷¹ It is not surprising that the Muslim al-Razi (AD 865–925) of Baghdad defines alchemy as "the astrology of the lower world."⁷² Fundamental to alchemical doctrine is the unspoken assumption that alchemy is a natural process, and to cite the German Dominican Albertus Magnus (d. 1280), if "nature could transform sulphur and mercury into metals by the aid of the sun and stars, it seemed reasonable that the alchemist should be able to do the

same in his vessel.”⁷³ In fact, Albertus reiterates this in his *De mineralibus* (Minerals):

Et hoc modo verum est quod dicunt Platonici: hoc enim modo prima causa fecit sementem formarum et specierum omnium, et tradidit eam stellis fixis et planetis exsequendam, ut dicitur in *Timæo*. Et hoc etiam est causa quare iuxta planetarum numerum et proprietates species metallorum accipiuntur.

And in this way what the Platonists say is true: for in this way the First Cause sowed the seed of all forms and species and entrusted the perfecting of it to the fixed stars and planets, as is told in the *Timæus*. And this is the reason why the number and properties and specific forms of the metals are held to agree with the planets.⁷⁴

Planetary influence—a factor in the slow formation of gold and silver—thus inextricably linked astrology and astronomy with alchemy, a connection likely developed from the incorporation of Aristotle’s *Meteorologica* into Avicenna’s text. Robert Grosseteste, notes Barbara Obrist, then “extended the Avicennian account to include the planets and their action on the elementary qualities, stating for example, that when the virtue of the sun moved pure sulphurous exhalations and mixed them with quicksilver, gold would arise, and the combined heat of the sun and coldness of the moon would give silver, etc.”⁷⁵ Similarly, Albertus suggested that expert alchemists “working under favourable astrological conditions, might be able to produce a form of metal which was an improvement on an earlier stage of its existence and open to beneficial influence from the stars.”⁷⁶ Many such treatises, in fact, urge the alchemist to work under favorable astrological conditions.⁷⁷ Constantine of Pisa outlines this connection between alchemical theory and the starry heavens in his *Liber secretorum alchimie*:

Et nullus potest uenire ad cubile alchimie nisi per motum superiorum infallibiliter noscendo eundem... Et idcirco per metallorum proprietates et motum superiorum infallibiliter habetur hec scientia, quia unus motus melior est altero. Et aliquando erit ita ut bonus motus uelocissimus, fortissimus et ditissimus, quod in instanti coniungendo et perpetuando atque congelando unus tumulus, siue numerus redigitur ad infinitum. Et super hoc dicit Aristoteles quod coniunctio aliquando fit, et coequis, et assimilatio et bonificatio in inuicem superiorum corporum in omiomeris et in terris, quod metalla uertuntur in aurum et argentum, lapides aliqui riuulosi uertuntur in preciosos lapides.

(And no one can arrive infallibly at the height of alchemy unless he perfectly knows the motion of the upper bodies. . . . This science can therefore be reliably acquired by taking into account the properties of the motion of the upper bodies, for one motion is better than another; sometimes

it happens that a good motion <is> very fast, very forceful, and most profitable, so that suddenly things unite, without interruption, and congeal <into> one lump or a number that could be counted out endlessly. Concerning this Aristotle says that now and then a conjunction of the upper bodies, the homeomerous things and the earth occurs: a reciprocal evening-out and absorption and refinement, so that metals are turned into gold and silver, and some stones in brooks are turned into precious stones.)⁷⁸

Alchemical doctrine thus borrows heavily from astrological theory. Indeed, Constantine goes much further in his astrological thinking, drawing special attention to the power of lunations. The alchemist, he argues, will not succeed in alchemy's transmutations unless he takes into account the penetrating action of the moon: "Etiam, quantumque luna fuerit in quadraturis bonis, tunc omnis alchimie operatio est bona, ut congelare, humare, et cetera" (Indeed, whenever the moon is in a good quarter [literally, "quadrature," when two planetary bodies are 90 degrees away from each other in the zodiac], all alchemical operations go well—congealing, inhuming, and so on.) The basis for this lunar theory lies in the importance of the moon in congealing, or hardening, mercury:

Igitur congelatio secundum Aristotelem est liquabilium partium coadunatio, aut fluxibilium partium inspissatio. Et sicut est impossibile celum lingua lambere, sic et impossibile habere introitum alchimie nisi mediante mercurii congelatione, et que a pluribus ignoratur et que doceri non potest infallibiliter nisi motu superiorum, *maxime per lunarem cursum, ut habetur in primis in hac tabula* [my italics]

(Congealing, according to Aristotle, is the uniting of parts that can be liquefied, or the thickening of parts that are liable to be fluid. It is as impossible to lick heaven with one's tongue as it is impossible to enter upon the <practice of> alchemy other than through the congealing of mercury, of which many are ignorant and which cannot be taught reliably except through the motion of the upper bodies, *specially the orbit of the moon, as first shown in this table.*)⁷⁹

As quoted above, Constantine does indeed provide lunar tables for the benefit of practicing alchemists. In fact, Albertus Magnus, too, notes how alchemy's basic operations are primarily driven by good lunations, a commonplace idea by the thirteenth century.⁸⁰ Constantine specifies that successful congealation of mercury occurs "per lunarem motum qui nobis est uicinior" (through the movement of the moon which is closest to us), especially when the moon is in Capricorn, Aquarius, or the House of Saturn.⁸¹ The moon, therefore, is central to alchemical theory and practice. In short,

the process of alchemy is inextricably tied to the timing of favorable lunations, which exert powerful impressions on form and matter:

Sed siue congelando, uel humando, purgando, et omnia opera in alchimia conficiendo, *oportet semper intendere ad quadraturas bonas et malas, et lunationes bonas et malas*, quia inferiores uultus sunt subiecti uultibus celestibus, quia per motum superiorum mouentur inferiora uirtute inprimente, non dominante . . . libero arbitrio mediante. Unde Gregorius: “Stella propter hominem, non homo propter stellam.” Sunt ergo boni motus et mali ad omnia operandum in alchimia. Ergo habere bonos motus, quia bona bonos decet.

(But whether congealing, inhuming, cleansing or accomplishing any other works of alchemy, *one must always be mindful of good and bad quadratures and good and bad lunations*, because the inferior aspects are subject to celestial aspects and because the motion of the upper bodies moves things here below by impressing them with their power; not by dominating <since> free will mediates between them. Whence Gregory <says>: “The stars are there for the sake of man, not man for the sake of the stars.” Therefore good and bad movements affect every work that is done in alchemy; so <let us> seek good movements, since good [outcomes] goes with good [movements].)⁸²

Needless to say, our brief excursus on the central importance of lunations in alchemy is highly relevant to the alchemical context of the *Franklin's Tale*. Like Constantine, the clerk of Orléans consults lunar tables and, at all times, “hadd this moones mansions in mynde” (v.1154). The Orléans *philosophe* carefully tracks the movement and phases of the moon in order to successfully transmute the black rocks:

Whan he hadde founde his firste mansioun,
 He knew the remenaunt by proporcioun,
 And knew the arisyng of his moone weel,
 And in whos face, and terme, and everydeel;
 And knew ful weel the moones mansioun
 Acordaunt to his operacioun

(v.1285–90)

Is the book used by the Orléans alchemist, with its inclusion of lunar tables, the *Liber secretorum alchimie* composed by Constantine of Pisa? The Franklin's summary of the peculiar “book,” carefully studied by the Orléans clerk, can also be used to describe the specific content of Constantine's lunar book:

Which book spak muchel of the operaciouns
 Touchynge the eighte and twenty mansiouns
 That longen to the moone.

(v.1129–31)

In the context of Chaucer's alchemical pun on "philosophre," "gold," and "cofre," we can assume that the lunar book used by the Orléans clerk may refer to any number of treatises used by fourteenth-century alchemists, who meticulously observed the moon from the smoky windows of their alchemical workshops.

Alchemy is not only in the language associated with the clerk—it indeed pervades other aspects of the text—especially the love language of Aurelius. As I have been suggesting, it is significant that Aurelius appeals to the astrological powers of the sun and moon for the removal of the rocks and that the clerk's book deals with the "operaciouns / Touchynge the eighte and twenty mansiouns / That longen to the moone" (v.1129–31). In his prayer to Apollo, Aurelius applies the titles "Lord Phebus" (v.1036, 1055, 1065, 1078) and "blisful suster, Lucina" (v.1045) as cover-names for the male sun and the feminine moon, respectively. Apollo, via the voice of Aurelius, prays to Lucina the moon with verbal pleas to follow specific instructions. The language of this imaginary dialogue, as will soon become clear, reflects a traditional motif in alchemical literature centered on the sun's courtship of the moon. I will argue that Aurelius specifically prays to the two most important planets of alchemical lore: "the sonne" (v.1030) and, by extension, "Lucina," (v.1045) in order to effect a transmutation of the black stones. Before the poem's midpoint, Aurelius prays to Apollo:

He seyde, "Appollo, god and governour
 Of every plaunte, herbe, tree, and flour,
 That yevest, after thy declinacion,
 To ech of hem his tyme and his seson,
 As thyn herberwe chaungeth lowe or heighe,
 Lord Phebus, cast thy merciabie eighe
 On wrecche Aurelie, which that am but lorn.
 Lo, lord! My lady hath my deeth ysworn
 Withoute gilt, but thy benignytee
 Upon my dedly herte have som pitee.
 For wel I woot, lord Phebus, if yow lest,
 Ye may me helpen, save my lady, best.
 Now voucheth sauf that I may yow devyse
 How that I may been holpen and in what wyse.

 Your blisful suster, Lucina the sheene,
 That of the see is chief goddesse and queene
 (Though Neptunus have deitee in the see,
 Yet emperisse aboven hym is she),
 Ye knowen wel, lord, that right as hir desir
 Is to be quyked and lighted of youre fir,

For which she folweth yow ful bisily,
 Right so the see desireth naturelly
 To folwen hire, as she that is goddesse
 Bothe in the see and ryveres moore and lesse.
 Wherfore, lord Phebus, this is my requeste—
 Do this miracle, or do myn herte breste—
 That now next at this opposicion
 Which in the signe shal be of the Leon,
 As preieth hire so greet a flood to brynge
 That fyve fadme at the leeste it oversprynge
 The hyeste rokke in Armorik Briteyne;
 And lat this flood endure yeres tweyne.
 Thanne certes to my lady may I seye,
 “Holdeth youre heste, the rokkes been aweye.”
 “Lord Phebus, dooth this miracle for me.
 Preye hire she go no faster cours than ye;
 I seye, preyeth your suster that she go
 No faster cours than ye thise yeres two.
 Thanne shal she been evene atte fulle alway,
 And spryng flood laste bothe nyght and day.”

(v.1031–70)

In a 2004 article on the subject of Aurelius's prayer to Apollo, Fumo argues that Aurelius's prayer “has received insufficient attention from critics,” positing possible sources and analogues for this passage (which includes Boccaccio's *Teseida* and *Filocolo*, Boethius's *Consolation of Philosophy*, Ovid's *Metamorphoses*, and a tradition of prayers to the Virgin Mary).⁸³ Moreover, Robinson suggests parallels to *Anticlaudianus* 2.3 and Bartholomaeus Anglicus's depictions of the moon in Trevisa's translation (1.8). Not surprisingly, Chaucer layers a character's actions with an impressive array of classical and medieval precedents in literature. While Aurelius certainly utilizes a multiplicity of sources as part of his artistic design, his invocation is essentially an expression of an amorous dalliance involving the sun and the moon: the inter- and intra-relationships of the planetary bodies to one another—specifically, “unto the sonne” (1030) and “Lucina the sheene” (1045)—as well as their celestial influence on the natural order. Fumo recalls Robert B. Burlin's assessment that Aurelius “calls upon Apollo to lead [Diana] astray in an incestuous, cosmic intrigue” in support of her argument that the cosmic race recalls Apollo's and Daphne's race in the depiction of sun and moon maintaining the same celestial velocity.⁸⁴

The tone of “cosmic intrigue” is clearly established in the parallel prayers of both Aurelius and Apollo. Specifically, Aurelius follows the

secular conventions of courtly lovers: he prays to the sun and “seyde his orisoun” (v.1026) as Love’s faithful servant in a desperate attempt to satisfy the demands of his “sovereyn lady deere” (v.1072). In a similar vein, Aurelius imagines Apollo praying to his “blisful suster” (v.1045), Lucina, in what appears to be the guise of a courtly lover. Aurelius depicts Apollo as a suppliant unable to command the “chief goddesse and queene” (v.1046) to do his bidding with a straightforward decree. Rather, the sun is obligated to beseech her with incessant prayer—for example, “preieth hire” (1059), “Preye hire” (1067), “preyeth your suster” (1066), “prey hire” (1073)—and thus the masculine Sun is likened to a paramour diligently in prayer to his sovereign lady, the feminine Moon. More important, there is the real possibility that she will in fact *refuse* his request, despite the fact that Apollo is above Lucina as “god and governour” and Lucina tends to “folweth yow [the sun] ful bisily” (v.1051). Aurelius clarifies, “And but she vouche sauf in swich manere / To graunte me my sovereign lady deere, / Prey hire” (v.1071–3). The whole scene is filtered through Aurelius’s courtly desires, and the language of prayer, I believe, simply evokes a particular strain of courtly love rhetoric found in the romance genre.⁸⁵ It is important to consider the reasons for naming the moon Lucina (as opposed to Diana, the more traditional appellation for the deity). As the goddess of childbirth, Lucina is responsible for bringing offspring into the light (hence, *lux*). Moreover, this reference to Lucina suggests a lunar body impregnated by solar rays, which penetrate “right as hir desir / Is to be *quyked* and *lighted of youre fir*, / For which she folweth yow *ful bisily*” (v.1049–51, emphasis mine). However, this coincidence of courtly mythography with the language and constellations favored by the alchemists is not all. There is in fact another alchemical link here.

The complex interdependence of planetary influence between the female Moon and the male Sun is, in fact, strongly reminiscent of the famous allegorical poem *Epistola solis ad lunam crescentem* (the Sun’s Letter to the Waxing Moon; or *Risalah ash-Shams ila ‘l-hilal* in the original Arabic), a dialogue that captures the courtship and marriage of the Sun and the Moon. Chaucer’s reference in the *Canon’s Yeoman’s Tale* to the “book Senior” (viii.1450)—that is, the book of Senior Zadith—begins with this poem. Indeed, Chaucer’s narrator paraphrases a passage from a dialogue in a section of the book entitled “Tincture operatio.”⁸⁶

This “book Senior” is in many ways the flagship within the medieval armada of extant texts on figurative alchemy. In tenth-century Egypt, “Sheikh” (*Senior*) Muhammad ibn Umail at-Tamimi as-Sadiq (ca. 900–60), known to the Christian West as “Senior Zadith filius Hamuel,” composed a commentary on his own allegorical poem, the *Epistola solis*. Latin

versions of the Arabic treatise contain portions of both the commentary and the poem, which are, in fact, both confusingly entitled *Epistola solis ad lunam crescentem* (figure 3.2).⁸⁷

The Latin version of the commentary (also known later as the *Tabula chemica* for its inclusion of a tablet of symbols) features an allegorical poem on the principles of alchemy followed by a compendium of quotations (i.e., the commentary portion) from ancient philosophers based on ten signs or figures witnessed during Ibn Umail’s visit to an Egyptian temple (as described in the prologue before the poem):

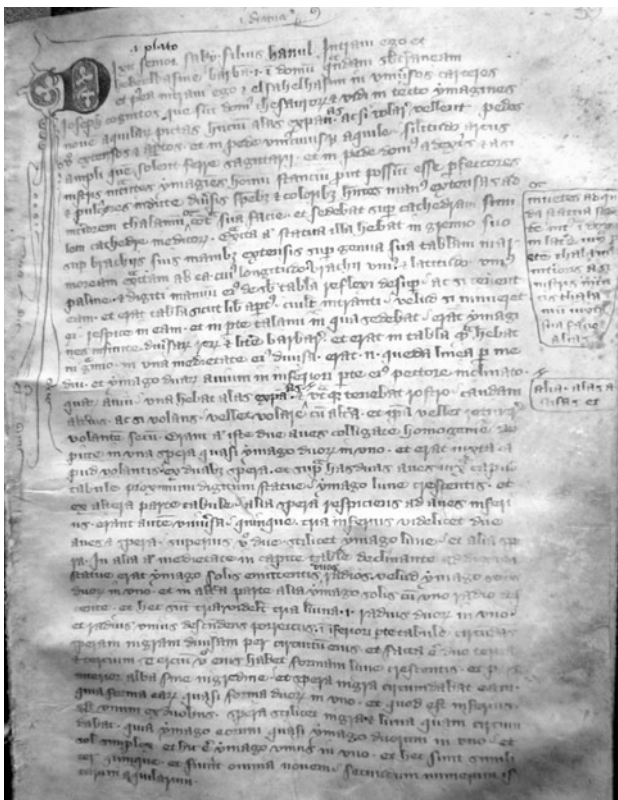


Figure 3.2 Trinity College, Cambridge, MS O.2.18 (James’ catalogue, 1122), fol. 39r. Duncan speculates that Chaucer might have used this late thirteenth-century English manuscript in which a contemporary hand annotates (in black ink shown in the upper-left hand corner) “Dixit Senior” with “i. Plato.” By permission of the Master and Fellows, Trinity College, Cambridge.

Exposui etiam & explanavi has decem figuras, & demonstravi postea finem carminis mei, quod planè non potuit fieri sine carmine, & aperiam tibi manifestè quae celavit ille sapiens, qui fecit statuam illam in domo illa, in qua descripsit totam illam scientiam, quasi in figura sua, & docuit sapientiam suam in lapide suo, & manifestavit eam intelligentibus. (148)

(I expounded and even explained these ten figures, and I demonstrated afterwards the point of my poem, since it plainly could not be done without song, and I made open to you manifestly what that wise man had concealed, he who made that statue in that house, in which he described all that knowledge in its shape, just like in his shape/form, and taught that wisdom in its stone, and made it manifest to those who are perceptive.)⁸⁸

The *Rosarium philosophorum* (The Rose Garden of the Philosophers), attributed to the Catalan physician Arnald of Villanova (ca. 1240–1311), discusses ibn Umail’s sacred marriage (*hieros gamos*) of the male, golden sun with the female, silvery moon. Moreover, Chaucer mentions this “Rosarie” of “Arnold of the Newe Toun” (viii.1428–9) in the *Canon’s Yeoman’s Tale*. While the idea that the sun imbues the moon with its light is commonplace, Chaucer’s knowledge of Ibn Umail’s *Epistola solis ad lunam crescentem*, I will argue, is a direct source for the libidinous relationship that he establishes between the solar and lunar bodies in the *Franklin’s Tale*. Like the Franklin’s female moon, who expresses “hir desir . . . to be quyked and lighted of youre [Lord Phoebus’s] fir,” the sun in the *Epistola solis* addresses the moon, “In tenuitate nimia dabo tibi de pulchritudine mea lumen, quo pervenitur ad perfectionem” (In excessive weakness, I will give you from my beauty the light through which one reaches perfection) to which the Moon replies,

Tu mei indiges, sicut Gallus Gallinae indiget, & ego indigeo ope tua ô Sol, sine cessatione, cum tu sis perfectis moribus, pater luminarium, tu es lumen, dominus excelsus & magnus. Ego luna crescens frigida & humida, & tu sol calidus & siccus. (148)

(You need me as the cock needs the hen, and I need your works, O Sun, without interruption, because you are of perfect character, the father of all lights, the light, the great Master and high Lord. I am the rising moon, moist and cold, and you are the sun, warm and dry.)

The female moon articulates the sun’s authority above her as lord and husband. Similarly, Aurelius does not adhere to the Greco-Roman hierarchy of the planets with Saturn as the ruling overlord of the planets, but instead, positions the sun as the supreme “Lord” (v.1036, 1038, 1041, 1049, 1055, 1065, 1078), or as Fumo points out, “Aurelius’s prayer grants to *Apollo* the powers that the Boethian passage grants instead to the First Mover, that very ‘Eterne

God' addressed by Dorigen in her first complaint."⁸⁹ In Grennen's analysis of the *Second Nun's Tale*, he refers to the alchemical language of sexual intercourse and marriage—that is, the union of gold and silver or the marriage of *Sol* and *Luna*—as “an important branch of alchemical allegory generally referred to as the ‘chemical wedding.’”⁹⁰ By way of example, the *Visio arislei*, a section of the *Turba philosophorum*—a highly influential twelfth-century Latin translation of an Arabic text composed around AD 900—is “a dream vision of the marriage of sulphur and mercury which explains the ‘multiplying’ family relationships in the idiom of alchemy ... within a typical allegory of love.”⁹¹ Moreover, this medieval trope of the alchemical wedding incorporates the incestuous relationship between the gods Apollo and Diana. It is interesting to note that a 1550 edition of the *Rosarium* interprets the alchemical union between the Sun and the Moon as incestuous, and one illustration even depicts *Sol* (the king) and *Luna* (the queen) “conjoining their *left* hands, quite literally a sinister gesture, which reminds cognoscenti that these two people are, in fact, brother and sister—as were Apollo and Artemis, deities of the sun and moon.”⁹² The sexual union of the sun and moon illustrates the principle of opposition in alchemical doctrine and marks the point when “alchemy acknowledges little distinction between literal and metaphoric.”⁹³

Coincidentally, the fictional character “Arisleus,” the highly prominent figure who appears in the opening line of the *Turba philosophorum*, has a name strikingly similar to Aurelius of the *Franklin's Tale*. In the *Visio arislei* at the end of the *Turba*, the author narrates how Arisleus procures the allegorical coupling of the sun (gold) and the moon (silver)—that is to say, a marriage between the king's son to his daughter—which Arisleus considers the perfect, ideal marriage.⁹⁴ It is also worth mentioning that John Dastin, a fourteenth-century English alchemist famous for his letter to Pope John XXII in defense of alchemy, includes an imaginary dialogue between the sun and moon in his *Verbum abbreviatum*, an alchemical treatise on the elixir of life. He tells us that when “the humidity of the sun is joined with the spittle of the moon in one body you will have the whole mastery. And if you require the service of other bodies, you should first convert them to the likeness of the two planets.”⁹⁵ At any rate, Aurelius's imagined dialogue of the sun and moon follows a specific narrative technique that is, to my knowledge, unique to medieval alchemical literature.

More important, astrological imagery in the *Epistola solis* depicts the sexual union of the two planets as the new moon enters the same astrological mansion as the sun:

Quando copulati fuerimus aequitate status in mansione, in qua non fit aliud, nisi leve habens secum grave, in quo vacabimus, & erimus sicut

vacat mulier & vir ejus, & hoc est verum ex locutione. Et ego, ô sol, cum conjuncti fuerimus vacaturi in ventre domus clausae, recipiam à te animam adulando, etsi abstuleris pulchritudinem meam, & fiam ex propinquitate tua tenuis, exaltabimur exaltatione spirituum, quando ascendimus ordinem seniorum. Lucerna lucis tuae infundetur lucernae meae et (ex) te et (ex) me (fit) sicut commixtio vini et aquae dulcis... & prohibebo fluxum meum, postquam indutus fueris nigredine mea, colore qui fit velut atramentum post solutionem tuam, & coagulationem meam. Cum intraverimus domum amoris, coagulabitur corpus meum, & eris in vacuitate mea. (149)

(When we will be united in an equality of status in the house, in which there is nothing else except that the heavy has the light with it, in which we will remain, we will be just like a woman and her husband who live there, and that is true from our speech. And, O Sun, when we will have been united, we will be staying in the belly of this closed house, then I will receive spirit from you by adoring you, although you will take away my beauty and through your closeness I will become thin, and we will be heightened in a spiritual exaltation when we ascend the order of the elders. The lamp of your light will be poured into my lamp, and of you and of me there will be a mixture, as of wine and sweet water And I will stop my flow, after you will have been clothed in my blackness, in the color which arises like ink after you have loosened and I coagulate. When we will have entered the house of love, my body will coagulate, and you will be inside my emptiness.)

Chaucer considers the conjunction of the sun and moon significant, and he even articulates a procedure for determining the time and position of this conjunction in his *Treatise on the Astrolabe*.⁹⁶ Moreover, the general notion of planetary conjunction as a metaphor for sexual intercourse appears quite explicitly in Chaucer's *The Complaint of Mars*. In this astrological allegory, Venus penetrates the same planetary house as Mars at the appointed time for adultery:

Thus be they knyght and regnen as in hevne
 Be lokyng moost; til hyt fil on a tyde
 That by her bothe assent was set a stevene
 That Mars shal entre, as fast as he may glyde,
 Into hir nexte paleys, and ther abyde,
 Walkynge hys cours, til she had him atake,
 And he preide her to haste her for his sake.

(*The Complaint of Mars*, 50–6)

Remarkably, this reference to celestial bodies engaging in planetary conjunction, a symbol for sexual penetration (i.e., “Mars shal entre, as fast as

he may glyde, / Into hir nexte paleys”), rarely garners such full expression in medieval poetry, especially in the context of *fine amor*. Planetary bodies glide into alignment for a maximal exchange of light and influence, a celestial model for corporeal bodies on Earth (figure 3.3).⁹⁷

In the *Franklin’s Tale*, Aurelius expresses an alchemical and planetary balance of oppositions between the Sun and Moon. Aurelius and Dorigen are, themselves, analogous to the masculine Sun and feminine Moon, respectively. Moreover, the first three letters in Aurelius’s name suggest a dawning, the break of sun in the cold, dewy morning before the heat of day. Like the passive Moon being illuminated by the Sun’s rays, Dorigen is thus “oon the faireste under sonne” (v.734). Interestingly, Dante and other medieval astrologers associate the Moon with the “breaking of religious vows.”⁹⁸ In consideration of Dorigen’s lunar vows, Aurelius demands two propositions that are inherently contradictory. As pointed out by critics, an aporia arises from his desire for Dorigen to break one vow and uphold another—that is, Dorigen’s marriage vow to her husband and her rash promise to Aurelius, respectively. Similarly, Aurelius’s sun and moon are, quite literally, set in “opposicion”



Figure 3.3 Trinity College, Cambridge, MS O.8.24 (James’ catalogue, 1399), fifteenth century, fol. 4r. The alchemical marriage of Sol (left) and Luna (right) conjoined by the priestly Mercurius (middle). By permission of the Master and Fellows, Trinity College, Cambridge.

(v.1057). Whereas Ibn Umail's sun and moon are united in conjunction (aligned in this order: sun, moon, and Earth), Aurelius instead positions the sun in "opposition" to the moon (sun, Earth, moon, which also generates a high tide). As we shall see, this error in his planetary calculation has disastrous consequences for Aurelius, who identifies himself with the masculine Sun.

However, it is also not surprising that Aurelius conscripts the full moon for his alchemical operations. Ibn Umail's commentary portion of the *Epistola solis* also states the importance of a full moon in the context of alchemy:

Luna plena est aqua Philosophorum & radix scientiae. . . . Et innotesco tibi ô fili, quod investigavi super communicationem Lunae plenae, per figuram Lunae quam descripsit sapiens, juxta Lunam plenam, quae est vicina illi: & fecit significationem ejus, & nisi esset bona illa sphaera, quae est figura lunae plenae, ignoraretur quid esset. Et haec semper est Luna apud perfectionem, & plenitudinem sui luminis. (159)

(The full moon is the water of the Philosophers and the root of knowledge. . . . And I make it known to you, my son, that I investigated what the full moon imparts, through the image of the Moon which the wise man described, alike to the full Moon, which is its neighbor; and he made an indication about it, that unless it were that perfect sphere, which is the image of the full moon, he would ignore it. And the Moon is always near this completion, and the fullness of its light.)

While a full moon captures light from the sun, which penetrates the lunar body with *maximal* light, the sexual metaphor in fact occurs during the new moon when both bodies occupy the same house/bedchamber, before it progresses toward a full moon. In comic irony, Aurelius condemns the sun and moon to a spatial separation in *opposite* houses, restraining them from uniting in planetary conjunction. But in the *Epistola solis* and in *The Complaint of Mars*, planetary consummation takes place within the *same* astrological house, the "house of love" (*cum intraverimus domum amoris*). While the full moon imparts knowledge to the alchemist (an idea that I shall return to later), it is a *new* moon that signifies the sexual and chemical union of two bodies.

In the *Epistola solis*, the Sun adds, "nec dignitas mea ipsi negabitur, nec vilescet per carnem infirmatum leo. Quod autem successisti mihi, nigri apud augmentum plumbi" (Dignity will not be taken away from you and will not become cheap, as a lion will not become cheap, being weakened by the flesh. Since you took my place, with an increase in dark lead) The zodiacal sign of the Lion (Leo) represents the sun's high ascent at the summer solstice, as well as the sacred *domus clausae* of sexual union.⁹⁹

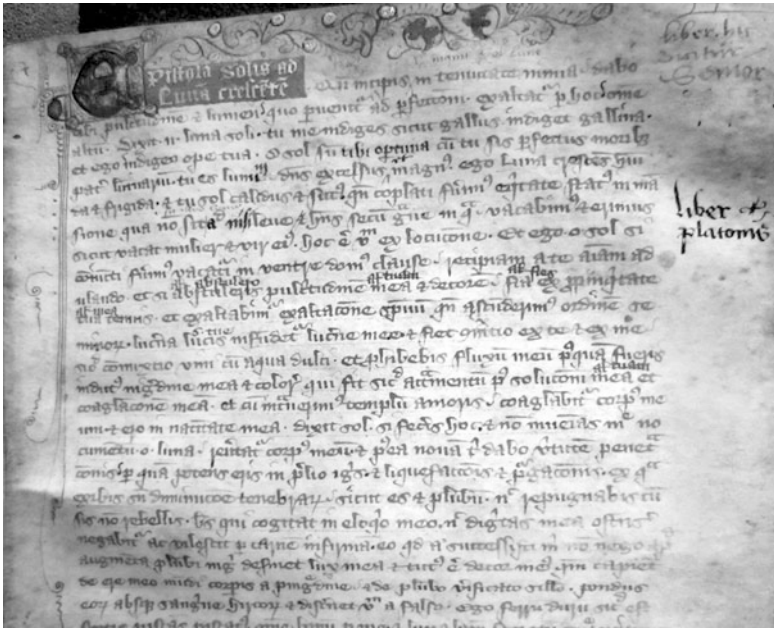


Figure 3.4 Trinity College, Cambridge, MS O.2.18 (James’ catalogue, 1122), fol. 40r. Gold initial and title in white and on green: “*Epistola solis ad lunam crescentem*” with a later note “*liber hic dicitur senior*” (upper-right hand corner). By permission of the Master and Fellows, Trinity College, Cambridge.

Like the “Sun’s Letter to the Crescent Moon,” Aurelius imagines the disappearance of the black rocks to occur at the sun’s astrological mansion, “which in the signe shal be of the Leon” (v.1058), when the sun claims maximal influence on Earth. At any rate, the irony lies in the fact that Aurelius positions the sun and moon in opposite astrological mansions, which not only violates the astrological doctrine of love, as stipulated in the *Epistola solis*, but also uncannily anticipates Aurelius’s own future decision to release Dorigen of her rash promise to “love yow best of any man” (v.997) (figure 3.4).

“Sun and Moone, Erth and Water”

Before we continue with our analysis of Aurelius’s prayer, it is worthwhile to note the significance of the Breton stone’s color—black—and the important detail of its exact location in the sea. As the authoritative *Turba philosophorum* states very clearly:

nam una est philosophorum tinctura, cui ad placitum nomina sumpserunt, et ablato proprio nomine *ipsam nigrum nuncupaverunt, eo quod nostro extractum est a pelago.*

(there is one Tyrian tincture of the Philosophers to which they have given names at will, and having abolished the proper name, *they have called it black, because it has been extracted from our sea*).¹⁰⁰

An alchemist might kill his raw material (usually an earthy, metal alloy) by blackening (*denigrati*) its surface via oxidation (*melanosis*). The *Epistola solis* notes, “ignis denigravit id cum praeparatione, & nominaverunt illam denigrationem primam conjunctionem, quia conjunctus masculus est foeminae. Et est signum perfectae conjunctionis, & susceptionis unius alterius” (161; Then the two turn black, since fire blackens it with preparation, and they named that first blackening “conjunction,” since the male is conjoined with the female. This is the sign of a perfect conjunction, and one’s acceptance of the other.) This process is also inherent in the often-repeated etymology for the word “alchemy”: the root “kemet,” the word for Egypt (i.e., the birthplace of alchemy) means “black” or “black earth.”¹⁰¹ As Christine Chism adds, “This blackness invokes Plato’s discussion of primal matter as neutral; its absence of color and differentiable qualities makes it a better material for endowing of more noble qualities.”¹⁰²

More importantly, the black rocks and the philosophers’ stone are linked by seawater and solar fire. In the original passage of the “book Senior,” which Chaucer quotes from, the stone is burned to a black color and purified in the waters of the sea:

Dixit, quid est magnesia? Respondit magnesia est aqua composita, congelata, quae repugnat igni. *Hoc mare latum, magnum bonum, cujus bonitatem commendavit Hermes. Fecit enim magnesiam hic spiritum & animam, & corporis cinerem, qui est intus in cinere* [my italics]. (180)

(And he said: “And what is magnesia?” He said: “It is congealed composite water which resists the killing through the fire. *It is the wide large good sea, whose excellence Hermes described. He made this magnesia the spirit and the soul, and the ash the body [i.e., the blackened matter], that which is inside the ash.*”)

It is also stated that “ipse operatur cum humiditate aquae maris” (176; it works through the humidity of the ocean water). Indeed, the *Epistola solis* repeatedly links seawater with hidden knowledge and the occult properties of the black stone:

Respexisti enim ad haec secreta magna, nobilia, quae latent omnes homines, *in marium tenebris sunt, & fuerunt eorum intelligentiae, donec*

manifestavit ea Philosophus filius Hamuel: *Zadith, & extraxit à fundo [marium] eorum margaritas praeciosas, & ostendit tibi manifestè & apertè hoc secretum celatum, quod appropriavit Dominus gloriosus huic lapidi vili & imprecibili, & est praeciosius quod est in mundo & vilius.* (194, my italics)

(You once looked for these great and noble secrets, which lie open to all people—they are in the shadows of the seas, and have been open for understanding, as long as the Philosopher Hamuel the son made them manifest. And Zadith plucked precious pearls from the depth of those seas, and displayed that hidden secret to you openly and clearly, which glorious God designed as a property for this common and non-precious stone—which is more precious because it is in the ground and cheap.)

& est lapis perfectus & rotundus, & est mare, unde intellexi, quod haec est radix scientiae hujus occultae. (159)

(and that is a stone perfect and round, and it is the ocean, from which I realized that it is the root of that hidden knowledge.)

Nominaverunt etiam lapidem suum, qui est magnesia, mare, quia ex eo ascendit nubes eorum & pluvia. (179)

(They even named it their own stone, that is, magnesia, the ocean, since it causes clouds and rain to ascend from it.)

In the *Turba philosophorum*, production of the stone involves washing the material in the waters of the sea, desiccating it in the heat of the dry sun, and again dissolving it in seawater to deprive the stone of its blackness:

Scitote, omnes huius artes investigatores, quod opus nostrum, cuius inquisitionem passi estis, *ex maris fit generatione*, quo post Deum et in quo opus perficitur. Accipite igitur alcut et *veteres lapides marinos*, et car<bo>nibus assate, quousque albi fiant...*et coquite in sole et terra nigra* per quadraginta duo dies (p. 167, my italics)

(Know, O all you investigators of this Art, that our work, whose investigation you have endured, is produced by the generation of the sea, by which and with which, after God, the work is completed! Take, therefore, Halsut and old sea stones, and boil with coals until they become white [i.e., gold;...] cook in the sun and black earth for 42 days).

The idea of the alchemist's furnace as an imperfect replica of the sun, which has the natural power to heat the earth into a black color, is a medieval commonplace: Thomas of Bologna, for example, states how it is the virtues of the sun that produce the form of gold (the "white" color), and John Dastin, in his *Rosarius*, believes "The fire employed in the alchemical process should gradually be increased in heat like the sun in its progress through the signs of the zodiac."¹⁰³ However, with the

application of water in mind, Multhauf points out, “Alchemy, which had often been called the art of fire, became more the art of dissolution.”¹⁰⁴ In other words, in addition to fire, the action of water (especially seawater) equally contributed to the alchemical process.

Alchemical imagery associated with the sea, which covers the alchemist’s black earth, also appears in the pseudo-Thomistic *Aurora consurgens*, a thirteenth-century alchemical *opus* of seven parables. In the seventh parable (“Of the Confabulation of the Lover with the Beloved”), the author writes:

Convertimini ad me in toto corde vestro et nolite abiicere me, eo quod *nigra sum* et fusca, quia decoloravit me sol et abyssi operuerunt faciem meam et terra infecta et contaminata est in operibus meis (132)

(Be turned to me with all your heart and do not cast me aside because *I am black* [my emphasis] and swarthy, because the sun has changed my color and the waters have covered my face and the earth has been polluted and defiled in my works).¹⁰⁵

The author of the *Aurora* uses allegorical and biblical language to express transmutations of the soul, borrowing lines from another erotic and mystical text, the Song of Songs. Like a base metal, the alchemist himself becomes the ready material for transmutation. The purifying waters of the sea then cover his “black and swarthy” appearance. Like the Breton stone of the *Franklin’s Tale*, the sun blackens Nature’s raw material, which is then soaked and washed in seawater. But what of the clerk of the *Franklin’s Tale*? How do the clerk’s actions relate to black rocks and the sea? In another *Aurora* parable, the Israelites witness the rod of Moses transmute a rock into water: “a sure rock, which cannot be split unless it be . . . smitten three times with the rod of Moses, that waters may flow forth in great abundance.”¹⁰⁶ Later, the alchemist writes that “in the Red Sea there was a way without hindrance, since this great and wide sea smote the rock and the (metallic) waters flowed forth.”¹⁰⁷ In this context, Moses uses God’s occult powers of alchemy in order to transmute rock (elemental earth) into seawater.¹⁰⁸ We can see, then, how black rocks, the sun, the moon, and the sea all constitute the material stuff that brings about alchemical transmutation.

Pearce the Black Monk, in his treatise upon the Elixir, sums up alchemical theory by simply naming four essential objects: “Sun and Moone, Erth and Water; / And here ys alle that men of clatter.”¹⁰⁹ Like the four known essential attributes of alchemical theory—“Sun and Moone, Erth and Water”—the Franklin’s *Sun* (Apollo) and *Moon* (Lucina), *Earth* (the black rocks) and *Water* (the tidal flood) all equally constitute the

raw materials required for transformation, and Chaucer connects these by a complicated process of celestial influence and alchemical change. Chaucer's rocks represent the natural processes of alchemy on a macrocosmic scale (which the unsuccessful alchemists attempt to replicate in their *microcosmic* laboratories): the fires of Apollo burn the geologic substance into a black color, which the action of Luna's tides subsequently wash and purify. Or perhaps the black matter is transmuted by natural heat in the dark chambers of subterranean depths, when Lucina follows Aurelius's instructions "to synken every rok adoun / Into hir owene dirke regioun / Under the ground" (v.1073–5)—that is to say, "That of Britaigne that rokkes were aweye, / Or ellis they were sonken under grounde" (v.1269). A subtle but no less significant detail is that the rocks are imagined to sink "under grounde" in the location of metal formation (as opposed to placing them under water above the ocean floor).

Albertus Magnus, in the *Liber mineralium*, compares the forces of the natural world with the artificial interventions of humans, making the assumption that nature can be induced by art:

Quod enim virtutes elementales et cœlestes faciunt in vasis naturalibus, hoc faciunt in vasis artificialibus, si artificialia formantur ad modum vasorum naturalium: et quod facit natura calido solis et stellarum, hoc faciet et ars calido ignis: dummodo contemperetur sic, quod non excedat virtutem se moventem et informantem quæ est in metallis: huic enim cœlestis inest virtus quæ primo commiscuit eam: et hæc inclinatur ad hoc vel ad illud per artis iuvamen.

For whatever the elemental and celestial powers produce in natural vessels they also produce in artificial vessels, provided the artificial [vessels] are formed just like the natural [ones]. And whatever nature produces by the heat of the sun and stars, art also produces by the heat of fire, provided the fire is tempered so as not to be stronger than the self-moving formative power in the metals; for there is a celestial power mixed with it in the beginning, which may be deflected towards one result or another by the help of art.¹¹⁰

In this context, the Franklin's ocean is likened to an alchemist's water basin and the penetrating action of the Sun corresponds to the operations of an alchemist's furnace. In other words, routine features of the alchemical laboratory—such as the intense heat of calcination (oxidation), sublimation, and distillation—have their natural counterparts in the actions of the sun, the moon, and the sea on physical matter. According to John P. McCall, "In spite of their rhetorical guises, the classical divinities in the *Franklin's Tale* are reassuringly natural."¹¹¹ The "figures of physical nature" in Aurelius's prayer include the sun and moon, situated in the heavens,

and the Earth (the black rocks) and the sea, which inhabit the sublunary realm: these four natural entities are unequivocally synonymous with the four essential attributes of alchemical doctrine. While there remains no human-constructed alchemical laboratory in the *Franklin's Tale*, it is the natural world that provides the necessary material for the production of "gold" (or, as will soon become apparent, the wisdom of God).

Temperaunce and the Chemical Wedding

The theme of "opposition" and balance in Aurelius's prayer to Apollo recalls the dynamic equilibrium established in the marriage pact between Arveragus and Dorigen. The Franklin begins his tale relating the courtship and marriage between a knight named Arveragus and a lady named Dorigen, "oon the faireste under sonne" (v.734), before he embarks on a lengthy digression pertaining to the theme of marriage. George Lyman Kittredge's seminal essay on the ideal of perfect love in the *Franklin's Tale* as a conclusion to "the Marriage-Group" ignited a century of scholarship on the marriage theme, primarily aimed at destabilizing this surface equilibrium, or, at least, as one critic writes, the ways in which "their story records the swings of that balance."¹¹² The notion of *temperaunce* signifies the Franklin's ultimate solution to strife in the marriage arrangement: "After the tyme moste be temperaunce / To every wight that kan on governaunce" (v.785-6). In Aurelius's prayer, Apollo is obliged to pray to his sister, and implicit in this detail is the fact that he cannot execute his will by force alone. In other words, "Love wol nat been constreyned by maistrye" (v.764), and Apollo's position as *lord* above the Moon, mingled with his repeated prayers to Lucina, reflect his dual role as lord and servant in planetary motion. One critic sees a similar parallel in that "Aurelius's description of the relationship between Lucina and Neptunus in some ways parallels the mutual sovereignty of Dorigen and Arveragus, as does his request to have the full moon match the velocity of the sun."¹¹³ It is the relationship between the sun and moon that articulates a celestial counterpart to the theme of "mutual sovereignty."

Lindsay A. Mann's article, inspired in part by Henri Dupin's scholarship on "courtoisie" in the French tradition, articulates "ten fairly particular characteristics so consistently associated with 'courtoisie' or 'gentillesse,'" a central motif in the poem. Of interest is the virtue of moderation ("mesure") or *temperaunce*, arguably the most important attribute of *gentillesse*, which modulates and harmonizes the other virtues.¹¹⁴ The Franklin's "careful verbal balancing, the rhetoric of moderation and equilibrium," as one critic puts it,¹¹⁵ and the repeated stress on *temperaunce*

suggest, I believe, another kind of “tempering”—that is, *temperatia*, the cornerstone principle of marriage in alchemical allegory. In other words, the Franklin’s prologue on marriage, the idea that the husband is both “servant in love, and lord in marriage” (v.793), strikingly recalls the oppositional equilibrium established within the framework of the alchemical wedding, and Chaucer thematically links the Franklin’s stress on *temperance* to Aurelius’s alchemical imagery of the sun’s courtship of the moon. In the *Canon’s Yeoman’s Tale*, the Yeoman draws attention to the required balance in mixing: “Of metals with a certeyn quantitee, / My lord hem *tempreth*, and no man but he” (viii.900–1, emphasis mine). The gold-making process fails when “It was nat *tempred* as it oghte be” (viii.925, my italics). For Chaucer, the notion of *temperance* is closely linked to the alchemical ideal of homogeneity and equilibrium in a physical universe that perpetually strives to reconcile oppositional elements.

In medieval alchemy, the principle of *temperance* extends to the mind and soul of the alchemist. In fact, Constantine of Pisa lists *temperantia* as one of the four cardinal virtues essential to a practitioner’s knowledge of alchemy:

Sed quia consideranda est scientia de quatuor cardinalibus uirtutibus, maxime in alchimia, que sunt prudentia que intelligit, iustitia que diligit, fortitudo que defendit, temperantia que modum inponit

(But the knowledge of the four cardinal virtues must be considered, especially in alchemy, they being: prudence, which understands; justice, which loves; fortitude, which defends; and temperance which imposes moderation.)¹¹⁶

Similarly, the pseudo-Thomistic *Aurora consurgens* articulates fourteen pillars for the alchemist seeking divine wisdom, which, interestingly, match several essential attributes of *gentillesse*. The principle virtues are humility, holiness, chastity, virtue, health, victory, faith, hope, charity, goodness, patience, temperance, spiritual discipline, and obedience. The twelfth pillar is *temperatia*:

Duodecimus est temperantia, de qua scribitur, quod omnia nutrit et foveat et in sanitate conservat. Quamdiu enim elementa sunt in temperantia, anima in corpore delectatur, cum autem discordant, anima in eo abhorret habitare. Nam temperantia est elementorum mixtio adinvicem, ut calidum cum frigido, siccum cum humido temperetur; et ne unum excedat aliud philosophi summo studio prohibuerunt... cavete, ne regem et uxorem suam fugetis nimio igne, cavete omne, quod est extra modum, sed super ignem putredinis hoc est temperantie ponite quousque sponte iungantur

(The twelfth is temperance, of which it is written that it nourishes and cherishes all things and keeps them in health. For as long as the elements are in temperance, the soul delights in the body, but when they are in discord, the soul abhors to dwell in it. For temperance is a mixture of the elements one with another, such that the warm is tempered with the cold, the dry with the humid; and the philosophers have been most careful to insist that one may not exceed another . . . beware lest you put to flight the king and his consort with too much fire, beware of all that is beyond the mean, but place it on the fire of corruption, that is of temperance, until they are joined of their own accord.)¹¹⁷

Like the “king and his consort” joined of their own accord, Chaucer refers to *temperance* in the marriage of Arveragus and Dorigen. As stated above, it is needed to regulate the bodily humors, especially when the “chaungynge of *complexioun* / Causeth ful ofte to doon amys or speken” (v.782–3, emphasis mine). Lynn Thorndike’s study includes a chapter on the work of a fourteenth-century Dominican alchemist named Robert of York (d. 1348), who later became known as Perscrutator. The English alchemist believed oppositional contraries “need tempering” by mixture in order to achieve a more elevated state of harmony in the universe: tempering the contraries, he concluded, effected a far nobler state in comparison to their independent status as mere opposites.¹¹⁸ While *temperatia* aims for harmony and balance in the cosmos, it requires a constant input of energy from multi-directional forces. In other words, the terms “stasis” and “equality” do not appropriately apply to *temperance*. The effects of *temperance* on the marriage union of Arveragus and Dorigen suggest the chemical action of mixing opposites. Like the chemical properties of a homogeneous mixture, the direction of energy is simultaneously both forwards and backwards in dynamic equilibrium, represented in the Franklin’s speech by the alternating roles of servant and master. As Jill Mann has suggested, the marriage “is not founded on equality, but on alternation in the exercise of power and the surrender of power.”¹¹⁹ This kind of alternation requires “ceaseless adjustments” while simultaneously striving for the ideal of patience, which is inevitably challenged by “aventure” and change in the Chaucerian world.¹²⁰ Similarly, John M. Fyler compares the old hag’s idea of marriage in the *Wife of Bath’s Tale* to the Franklin’s “fairer and more difficult equilibrium” in a post-lapsarian world, as opposed to the old hag’s call for a “total reversal of hierarchy.”¹²¹

In the *Franklin’s Tale*, the alchemical equilibrium between the sun and moon, established in terms like *lord/lady*, *governour/emperisse*, *god/goddesse*, and *brother/suster* reverberates with the Franklin’s ideal of balancing contraries in the marriage pact. The sun’s mansion in “opposicion” (v.1057)

to the Moon is an expression of the oppositional balance essential to the alchemical marriage. But Aurelius's aspirations inevitably fail. Unlike the marriage of Arveragus and Dorigen, Aurelius can only imagine a static and unidirectional opposition, which is not tempered by constant mixture (i.e., chemical combination) but is frozen in time and space: Aurelius instructs the moon to be "evene atte fulle always" (v.1068) and to "go no faster cours than" the sun (v.1066). For Chaucer, "trouthe" is a function of patience in a world dominated by chance. *Temperaunce* is therefore the physical operator acting on this domain of change—that is, it modulates movement from patience to trouthe.

The Transmutation of Black Stone: Symbol and Meaning

Critical scholarship on the *Franklin's Tale* rarely neglects to mention the black rocks off the coast of Brittany, which occupy a pivotal role in the narrative structure. As a poetic device, the rocks magnify the internal psychology of each main character (especially in the case of Dorigen's melancholic *nigredo*) and precipitate external actions, notably expressed in Dorigen's questioning of God's Providence and her rash promise to Aurelius. While Chaucer provides the reader with an identifiable location (Pedmark), descriptive details are known to differ considerably from present-day Penmarc'h. V. A. Kolve points out, "we are dealing with an invented landscape, with a meaning to be determined," and the importance of the black rocks remains "iconographic rather than literal."¹²² As Charles Owen Jr. suggested in his 1953 article, Chaucer's creation of the black rocks certainly adds a unique psychological and symbolic dimension to the Boccaccio versions of the poem.¹²³ For Carolyn Collette, Dorigen's visual experience relates to medieval faculty psychology: Dorigen focuses her full attentions on the rocks "because her will, weakened by her separation from her husband, cannot order the phantasms of the rocks into their proper place."¹²⁴ At first glance, Dorigen appears to cast the rocks—antithetical to "any fair creacion / Of swich a parfit wys God and a stable" (v.870–1)—as a destructive force and "a foul confusion" (v.869) with the power to obliterate ships designed and built by mankind and, by extension, the rocks represent the end of human life and relationships. The rocks are not so much a symbol of death and destruction, however, as a symbol for Dorigen's own recognition of her intense desire for a rationale from the Almighty. She expresses her need for wisdom from God, whom, she thinks, permits the existence of evil to disrupt the natural order. As Joseph D. Parry avers, "Of all the dangers she explicitly perceives in those rocks, given her preoccupation with Arveragus's absence, the

most important is the danger she senses in her own ignorance."¹²⁵ Parry grounds this idea on Susan Crane's observation that the rocks cause Dorigen to feel "a sense of isolation from intellectual argument."¹²⁶ As expected, Chaucer quickly reevaluates the symbol with Dorigen's promise and Aurelius's new enterprise to remove them. As a polyphonic tale with shifting (and evolving) perspectives, it is not surprising that readers can attribute varying symbols to these rocks. From the register of alchemy, I will argue, Chaucer deepens and extends the poem's potential for allegorical meaning.

After Arveragus leaves for England, the ideal of *temperance* in marriage is put to the test. Saddened by his absence, Dorigen's fixation on the black rocks engenders a prolonged state of *melancholia*. Her *plantus* to God coincides with teleological questioning, which, despite her final resolve to dispense with such "argumentz" and leave "al this disputisoun" to the "clerkes" (v.890), nonetheless reflects a profound moment of philosophical thinking. Dorigen's intense melancholic state, mingled with its Boethian resonances, I believe, belongs to what Noel Brann describes as the "Aristotelian doctrine of melancholy genius."¹²⁷ Throughout the Middle Ages, melancholy genius (a common trope) came to be associated specifically with the alchemical mystics who experience "melancholy 'darkness' or *nigredo*, corresponding to lead among the metals and to the Saturn among the planets" (129). In his *Sermo de passione Domini Nostri Jesu Christi*, the Catalan theologian Ramon Lull (AD 1232–1315) writes, "Then Jesus tasted the vinegar and it changed his complexion, transmuting it into melancholy (*illam in melancholiam transmutando*). This is the complexion of death which, allegorically speaking, is cold and dry" (135). As Brann points out, "the melancholy which visited Christ during the passion signifies what the alchemists termed dark *nigredo*—the equivalent of the state referred to by John of the Cross as a 'dark night of the soul'—which afflicted the Saviour's soul at the point of corporeal death just as it must also necessarily afflict the soul of the alchemist as he endeavors to emulate Christ's suffering" (135). This medieval tradition articulates the first stage of putrefaction in a purgative process involving the transmutation of the alchemist's cold and dry humoral complexion, or leaden melancholy, into "spiritual gold." The literal and metaphorical details that pertain to melancholic *nigredo* can be used to describe the relevant psychological experiences of various characters in the *Franklin's Tale*, especially those who deeply wish for the transmutation of the black rocks off the Breton coast. The alchemists' *nigredo* begins with a "delilition-inducing cold and dry form" (137). Following the initial stages of *nigredo*, Dorigen's fixation on the black rocks engenders her "sorweful sikis colde" (v.864). After Aurelius reveals himself to Dorigen, and once

she has made her rash promise to him, Aurelius, too, becomes fraught with “cares colde” (v.1305) and “felte his herte colde” (v.1023). In other words, Chaucer connects these two characters with emotions lacking in *temperaunce*, which manifest in the body as an excess of coldness.

More to the point, Dorigen’s “derke fantasye” (v.844) is a symptom of the alchemist’s dark, melancholic *nigredo*. It then follows that the “rokkes blake” (v.868) symbolize the psychological experience of black *nigredo*. When Dorigen first begins to experience *melancholia*, her companions “leden hire” (v.898) as her soul will embark on a journey of sublimation, from melancholic lead to spiritual gold. Brann succinctly describes sublimation in this context as “separating Saturn from Sol, that is, leaden melancholy from the pure golden state” (Brann, “Alchemy and Melancholy,” 141). Dorigen’s insistence on the purity of the natural world via the removal (or calcination) of black earth is invariably adverse to God’s Providence. The *Canon’s Yeoman’s Tale* ends with this admonition: “For whoso maketh God his adversarie, / As for to werken any thyng in contrarie / Of his wil, certes, never shal he thryve, / Thogh that he multiplie terme of his lyve” (viii.1476–9). This would seem to serve as a caution against Dorigen’s desire to “werken any thyng in contrarie” within the theological framework of the natural order. At any rate, Dorigen later repeats her lack of *temperaunce* with her intention to kill herself. Aurelius, however, “tempers” her emotional imbalance with a genuine act of forbearance: he willingly dissolves the terms of her rash promise, which culminates with his dispensation of material gold to the philosopher of Orléans, payment for removing the black rocks.

But before this, Aurelius deceives Dorigen into imagining that he does indeed “remoeve alle the rokkes, stoon by stoon” when, in fact, Aurelius simply hires a magician to provide the *illusion* of this impossibility having been actualized in the real world. Whether or not the rocks are removed, transformed, or hidden from view is altogether irrelevant. What matters is that every character *interprets* the original location of the Breton stone as a site now composed of only water. Marie-Louise von Franz reminds us that “as many [alchemical] texts also say, the water of life and the stone are one. . . . it is a very great paradox that liquid—the unformed water of life—and the stone—the most solid and dead thing—are, according to the alchemists, one and the same thing.”¹²⁸ In the *Canon’s Yeoman’s Tale*, Chaucer in fact makes reference to this commonplace metaphor: “privee stoon. . . is a water that is maad, I seye, / Of elementes foure” (viii.1452, 1459). In other words, the “ston” is paradoxically both solid rock, “ston,” and liquid water, “elixer clept” (viii.863).

In the *Canon’s Yeoman’s Tale*, the narrator notes how the “ston” has a multitude of varying nominal and semantic meanings, depending on

the relative perceptions of the speaker. The essential meaning of the philosophers' stone cannot be handed out by the alchemist because "secret" knowledge of this kind requires God's grace alone. The properties of the stone coexist in one temporal moment:

Also ther was a disciple of Plato,
 That on a tyme seyde his maister to,
 As his book Senior wol bere witnessse,
 And this was his demande in soothfastnesse:
 "Telle me the name of the privee stoon."
 And Plato answerde unto hym anoon,
 "Take the stoon that Titanos men name."
 "Which is that?" quod he. "Magnasia is the
 same,"
 Seyde Plato. "Ye, sire, and is it thus?
 This is *ignotum per ignocius*.
 What is Magnasia, good sire, I yow preye?"
 "It is a water that is maad, I seye,
 Of elementes foure," quod Plato.
 "Telle me the roote, good sire," quod he tho,
 "Of that water, if it be youre wil."
 "Nay, nay," quod Plato, "certein, that I nyl."

(viii.1448–63)

In the above passage, which paraphrases the *Epistola solis ad lunam crescentem*, the philosophers' stone is simultaneously both water and stone, Magnasia and Titanos, and all the four elements combined. In other words, the philosophers' stone of the *Franklin's Tale* may be perceived and interpreted as black rock, trouthe, *gentillesse*, love, generosity, and, finally, pure gold—depending on a character's motives and, more generally, one's internal psychology.

Among the alchemical writers of the Latin West, there were a number of friars who interpreted the philosophers' stone as a symbol for divinity, as well as a metaphor for Truth (*trouthe*), Christ, and the processes of transubstantiation.¹²⁹ Specifically, medieval writers of alchemy associated the philosophers' stone with the *Logos*, the personification of divine wisdom. According to Chaucer's "book Senior" (the *Epistola solis*), the philosophers' stone is said to be the root of all wisdom in the same way that the biblical figures of Adam and Eve (the first parents) begot the entire human race. Significantly, Ibn Umail claims, "manifestum ex verbis Hermetis, lapis igitur sapientum in ipso" (176; it is clear from the Hermetic writings that the stone is therefore wisdom in itself). Similarly, the author of the *Aurora consurgens* composes five chapters devoted to the female figure known as

the Wisdom of God. The sixth chapter is the parable “Of Black Earth, wherein the Seven Planets took Root.” The author’s black earth, the dark *prima materia*, “is identical with the sublime figure of Wisdom.”¹³⁰ As I said earlier, the black rocks of the *Franklin’s Tale* at first signify Dorigen’s own ignorance and her desire for knowledge from God. In the end, the Franklin’s black earth initiates a chain of events that end with the acquisition of wisdom. Like the *Aurora*, black earth in the *Franklin’s Tale* is used to signify this wisdom. The author of the *Aurora* identifies the philosophers’ stone with divine wisdom from the very outset:

Hanc Salomon pro luce habere proposuit et super omnem pulchritudinem et salutem; in comparatione illius lapidis pretiosi virtutem illi non comparavit. Quoniam omne aurum tamquam arena exigua et velut lutum aestimabitur argentum in conspectu illius, et sine causa non est. Melior est enim acquisitio eius negociatione argenti et auri purissimi (34)

(She it is that Solomon chose to have instead of light, and above all beauty and health; in comparison of her he compared not unto her the virtue of any precious stone. For all gold in her sight shall be esteemed as a little sand, and silver shall be counted as clay; and this not without cause, for to gain her is better than the merchandise of silver and the most pure gold.)

The *Aurora* author is using the language from Wisdom 7.7 and Proverbs 3.13–18 to make the point that the true philosophers’ stone is equivalent to the wisdom of God. Indeed, implicit in medieval religious texts on alchemy is the Pauline distinction between practical knowledge (*scientia*) and the wisdom (*sapientia*) bestowed by God (1 Cor. 12:8). One aspect of alchemy deals with material gold (i.e., the *scientia* of real gold-making), whereas figurative alchemy concerns itself with the attainment of wisdom (*sapientia*). Analogously, Aurelius offers the “philosophre” of the *Franklin’s Tale* five hundred pounds of gold, which the clerk unexpectedly refuses, doubtless because he obtains something that far exceeds even the value of “pured gold a thousand pound of wighte.” Such an ending implies that the philosopher of Orléans acquires “trouthe” and wisdom (*sapientia*) as a substitute for material gold, which is mere sand in comparison to the wisdom gained by witnessing Arveragus’s remarkable act of forbearance.

The obvious Christian symbolism in the *Franklin’s Tale* suggests salvific potential for a pagan world ignorant of Christian beliefs. In the context of the Janus-“Nowell” passage, Steele Nowlin argues, “If Janus looking both backwards and forwards is to be read as a symbol for potential rebirth, then the Christian imagery . . . implied in this passage initiates that rebirth.”¹³¹ Analogously, the solar imagery in the passage registers the Breton stone on a more profound level as a catalyst for revelation.

Alchemy adequately represents this imbrication of Christian and pagan elements. From a medieval perspective, the “occult” science derives from pagan antiquity but nonetheless exhibits a higher potential for Christian symbolism. In this vein, the Orléans philosopher unwittingly transmutes black matter into a revelation of heavenly wisdom, which indeed responds to Dorigen’s teleological questioning at the poem’s beginning. A *charlatan* alchemist would have accepted Aurelius’s offer of gold, but the clerk instead chooses as his payment something that is far more precious: the acquisition of wisdom, *trouthe*.

As E. T. Donaldson and others have suggested, the poem seems to signal a transition between the Old Law of the covenant (the letter) and the New Law of generosity, or *freedom*.¹³² In the context of the cries for “Nowell” and the poem’s Christian imagery of rebirth and renewal, the Breton stone, which initiates the tale’s events of mercy and grace, suggests an alternative reading. My argument supports Gerhard Joseph’s conclusion that “the verbal drift from ‘aventure’ to ‘grace’ captures in small the moral of the tale: the black rocks, rather than being the arbitrary ‘werk unreasonable’ that Dorigen has suspected them to be, are part of a larger plan that God’s grace can now begin to reveal.”¹³³ Similarly, the Orléans philosopher undergoes an interior transformation from the “false” alchemist seeking material gold to the “true” alchemist in pursuit of heavenly wisdom through God’s Providence. As I said earlier, Chaucer’s source material (the *Epistola solis*) claims that “the stone is therefore wisdom in itself.” In fact, the dual notions of true “spiritual” alchemy and false “material” alchemy also central to the *Canon’s Yeoman’s Tale*. As Bruce L. Grenburg has rightly noted, Chaucer distinctly links “ideal” alchemy with parallel notions of Boethian wisdom, obtained by the grace of God, and the “adjuration to flee Fortune’s lying promise of happiness through material goods.”¹³⁴ Leah Otis-Cour interprets the workings of grace in the *Franklin’s Tale* in the context of medieval marriage:

Having been designated a sacrament since the twelfth century, marriage came to be seen as conferring grace and constituting a path to salvation. . . . the notion is subtly evoked at the end of the tale, suggesting that the marriage of Arveragus and Dorigen, a loving relationship of reciprocity and *franquise*, adumbrates Christian marriage. We may even be tempted to see in the striking expression “sovereyn blisse” (v 1552) an evocation of the workings of grace, conferring a near-divine beatitude on the married lovers.¹³⁵

Like the ending of *Canon’s Yeoman’s Tale*, a partial glimpse of the grace of God, in the form of divine truth and the Christian virtue of *freedom*,

unexpectedly descends upon the Orléans philosopher. According to the words of the Christian Morienus in the *De compositione alchemiae*, the successful alchemist strictly requires the Christian virtues of *dilectionem* (affection), *humilitatem molliciem* (gentle humility), and *amorem perfectum atque verum* (perfect and true love). He reveals,

Quia istam rem, quam tu diu quesivisti, non poterit aliquis perpetrare nec perfectare, nec potuerit ad istam applicare ab aliquo sapiente nisi per dilectionem et humilitatem molliciem et amorem perfectum atque verum. Et est ista res quam deus adducit suis fidelibus quibus illam adducere disposuit cum fortitudine maiori usquedum sibi parat hominem a quo eam sciat et eam sibi detegat a suis secretis. Nec ista res aliquid est nisi donum dei, qui eam cui vult ex suis servis demonstrat, qui sibi sunt humiles et in omnibus subditi

(No one will be able to perform or accomplish this thing which you have so long sought or attain it by means of any knowledge unless it be through affection and gentle humility, a perfect and true love. For this is something which God gives into the sure keeping of his elected servants until such time as he may prepare one to whom it may be handed on from among his secrets. Thus it is only the gift of God, who chooses among his humble and obedient servants those to whom he reveals it).¹³⁶

Indeed, the black rocks—the *donum dei* (gift of God)—seem to hint at the medieval Christian idea of the philosophers' stone as Christ, the true *Lapis Philosophicus*.

Dorigen's wish to remove the lumps of earth (the impurities in coastal waters) and see a more perfect Earth after having "maad the coost so clene / Ofrokkes" instantly recalls the alchemist's desire to remove impure substances from baser metals for the production of gold. In other words, Dorigen's teleological questioning of the black rocks reverberates with the alchemical desire to "improve" matter and perfect God's creation, a doctrine that verged on heresy. In medieval Christendom, alchemical pursuits inevitably led to a heated debate on whether or not alchemists attempted to "improve" God's already perfect creations. The alchemist would of course argue that he was merely "imitating" or "aiding" nature's process, which occurs naturally in the Earth's deep bowels. In the fourteenth-century *Pretiosa Margarita Novella*, Bonus writes:

Each metal differs from all the rest, and has a certain perfection and completeness of its own; but none, except gold, has reached that highest degree of perfection of which it is capable. . . . Nature is ever studying variety, and, for that reason, instead of covering the whole face of the earth with water, has evolved out of that elementary substance a great diversity of forms, embracing the whole animal, vegetable, and mineral world. . . . Gold

is found in different forms, either mixed with a coarse rocky substance, or in a solid condition.¹³⁷

Bonus is articulating the natural reasons why Nature fails to cover the “whole face of the earth with water,” which would, theoretically, be more perfect. He makes an analogy between the imperfections on the Earth’s surface and the existence of baser metals in alchemy. It is perhaps no coincidence that Chaucer also draws a connection between alchemy and the topic of earth’s elevation above water. Dorigen is ultimately questioning the “imperfect” design of an ocean strewn with visible impurities protruding from its otherwise clean and flat surface.

More generally, Chaucer is questioning the uses of empirical observation in an experiential world and the operative and thematic uses of an Aristotelian framework in determining a character’s actions. Both Aurelius and Dorigen imagine the downward motion of the rocks—“Prey hire to synken every rok adoun / Into hir owene dirke regioun / Under the ground” (v.1073–5) and “But wolde God that alle these rokkes blake / Were sonken into helle for his sake!” (v.891–2). As the heaviest of Aristotle’s four elements (earth, water, air, and fire), the rocks would in fact be falling to their natural place in the earth’s gravitational center (coterminous with hell according to canto 34 of Dante’s *Inferno*). Aurelius also implores Apollo with the impossible proposal to halt the relative motions of the sun and moon so as to keep them in opposition for two years, which would sustain a great flood of water: the ocean would theoretically rise above the earth’s rocks (in natural motion). In sublime irony, Chaucer comically inverts the natural motions of both earth and water as “unnatural” phenomena. Alternate perceptions of what constitutes the “natural” is a hallmark of Chaucer’s comic strategy and politics of interpretation.

Chaucer likely draws conceptual ideas about the natural motions of earth and water from such discourses as Dante’s well-known *De situ et forma aque et terre*, as well as the *Divina Commedia*. As we discussed in chapter 2, Dante believes the motions of earth (the heaviest element and closest to the world’s center) and water (the lighter element) are directed toward the *causa finalis*: “the earth’s striving to achieve perfect sphericity, eventual submersion of the dry land.”¹³⁸ Natural place doctrine dictates the eventual submersion of Earth’s dry “humps” in a circle of water, as articulated by Aristotle. This inevitably begs the question why, therefore, are Earth’s rocks above sea level?¹³⁹ This topic in medieval cosmography and cosmogeny is epitomized in Dante’s own *De situ et forma aque et terre*. Dante attacks the rival theory that earth and water have different centers of gravity, which would explain the elevation of rocks in water, and he instead attributes the

protuberance of earth to the celestial influence of the eighth sphere (recall the clerk's "eighte speere in his wirkyng," 1280). Ristoro d'Arezzo (fl. 1282), however, argues that "the stars exert a sort of tidal action in drawing the waters back from dry land."¹⁴⁰ Chaucer here perhaps not only imitates the discussion with Dorigen's questioning of the protuberance of black rocks but also recasts the scientific imagination with the manipulation of reality as fundamental to a creator's art and artifice. Chaucer's witty portrayal of the Orléans clerk, who studies the stellar influences on earth and water, encapsulates a plurality of interpretations arbitrarily deemed "supernatural" or "natural" phenomena, a distinction that entirely depends on the relativity of perception. Illusions and natural impossibilities that occur in the experiential world are slowly parsed away by Aristotelian theory, which likewise fail to elucidate "natural" phenomena.

In the *Franklin's Tale*, the sinking or flooding of rocks also implies the medieval knowledge of conservation—that is, matter is not corruptible and God would not "In ydel . . . no thyng make" (v.867). However, the Orléans clerk alters space and matter with the imaginative possibility of annihilating the rocks altogether from space, "that *voyled* were these rokkes everychon" (v.1301, emphasis mine), a natural impossibility according to Aristotelian doctrine and a situation Aurelius rightly concedes as "an impossible" (v.1009). As W. Bryant Bachman Jr. argues, "Whatever may have been the actual process of altering this perception of reality, of 'maken illusioun' (1264), to everyone's perception, after the clerk has performed his part of the contract, the rocks no longer exist."¹⁴¹ The removal of rocks is very tightly analogous to the hypothetical occurrence of the annihilation of matter (a common medieval thought experiment later in the fourteenth century): "And so it was that after 1277 God was frequently imagined to annihilate all or part of the matter that existed in the material plenum of our world. Within this now empty space, many different situations were imagined for further discussion."¹⁴² Aquinas, for example, posited that if God withdraws conservation, then simultaneously all things would fall into nothingness in one instant and the heavenly motions would come to a halt.¹⁴³

In the context of the Orléans philosopher and his dealings with alchemy, these questions from medieval physics and the problems posed by the possible event of annihilation are indeed not surprising. Heated debates on alchemical theory draw on principles of motion and space from medieval physics, and thought experiments on the hypothetical removal of matter borrow from the conceptual ideas rooted in alchemical theory, and vice versa.¹⁴⁴ Dominic Gundissalinus, for example, subordinates alchemy as a branch of *physica* in his *De divisione philosophiae* (ca. 1150).¹⁴⁵ The clerk's scientific imaginings of counterfactuals in Aristotelian physics—the withdrawal

of God's conservation of matter—perhaps parodies the academic discussion on the consequences of God's power to annihilate matter. At the very least, Chaucer fabricates a narrative thought experiment in which the characters imagine counterfactuals in the natural world, and Dorigen confirms “For wende I nevere by possibilitee . . . it is agayns the proces of nature” (v.1343–5). The annihilation of rocks *secundum imaginationem* (according to the imagination) consciously removes temporal and spatial limitations, and this test-case scenario opens a Pandora's box of imagined alternatives. Chaucer allows us to think of a scientific thought experiment by bridging the imagination with his specific use of the word *voyled*. One critic has even pointed out a “small verbal parallel in the use of *voyled* (1050 and 1195), and a link in the use of *semed* and *thoughte*.”¹⁴⁶ I would argue that Chaucer creates a literary and figurative *vacua* with the imaginative annihilation of matter. When Dorigen consults her husband about the removal of the rocks, a full-blown crisis unfolds: we see the virtues of *gentillesse* and *trouthe* under the perceived threat of annihilation. The esteemed ideals of social conduct are in fact subject to the *real* possibility of instantaneous removal from both the natural and artificial worlds of the tale.

For the poet, Nature *is* alchemy. In fact, the extent of Nature's role in the alchemical process is a common topic of interest in the treatises. A typical argument would maintain that the alchemist, in his artificial laboratory (a controlled environment), can assume a privileged position as Nature's helping hand. The alchemist is therefore able to accelerate the otherwise slow processes involved in the production of precious metals. This is clearly evident from passages in the alchemical tracts linking alchemists to agricultural labourers working on Nature's soil and using the sun's heat to produce grains for making bread:

Quia non perficitur medicina haec, quae est Elixir eorum, nisi ex diversis rebus, & hunc laborem non nisi in multis diebus absolvunt. . . . Cujus exemplum est granum frumenti, quod non fit in germine suo granum, nisi ex diversis rebus, cum fit res una, & diversae res sint praeparationes ejus, in multis diebus & noctibus, per humorem terrae & calorem solis. Quia prius terra aratur & seritur, postea metitur, deinde tritatur & ventilatur, & alia multa quae operantur homines, donec extrahantur grana, deinde purgantur & moliantur & tartarisantur, & massantur, fermentantur, & coquantur, & fit panis (167)

(Since this medicine is not brought to completion, that is, their Elixir, except from diverse things, and they do not finish this labor except over many days. . . . An example of this is a seed of grain, which does not become a seed by germinating itself, except through diverse matters, until it becomes a single thing, and the preparations for it are diverse, over many days and nights, through the wetness of the earth and the heat of

the sun. Since beforehand the earth is plowed and sown, later reaped, then threshed and winnowed, and many other processes that men do, until the grain is extracted, then cleansed and worked at and tartarized, and lumped together, fermented, and cooked, and then becomes bread.)

In this respect, the alchemist in many ways resembles a cook or gardener, a handmaiden to Nature's art. It is no coincidence that the imagery of flowers and gardens comprises a large portion of the assorted titles for alchemical treatises. Thorndike notes several titles of this sort, which include: *Rosarius philosophorum* (Rosary of the Philosophers), *Rosarius minor* (The Lesser Rosary), *Flos florum* (Flower of Flowers), *De floratio philosophorum* (Flowers of Philosophy), *Flos regis* (The Flower of the King), *Flos paradisi* (Flower of Paradise), *Lilium paradisi* (Lily of Paradise), and so forth.¹⁴⁷ The works of Latin alchemy did, in fact, make extensive use of the *florilegium* (literally, a "gathering of flowers"), a literary form that was popular in the Middle Ages for its compilation of the choicest quotations taken from many different books.¹⁴⁸ But this floral connection to alchemy itself is made more obvious in a passage from the alchemical *Semita recta* attributed to Albertus:

Now I have taught you to collect various flowers full of good odors and redolent with health and beauty with the glory of this world. This is the flower of flowers, the rose of roses, and the lily of the valley. Rejoice therefore, youth, in thy adolescence and gather flowers, for I have introduced thee to the gardens of Paradise.¹⁴⁹

An alchemist isolates gold from baser metals in the same manner as a gardener selectively collecting flowers, roses, and lilies. In fact, flower imagery abounds throughout the *Epistola solis*.¹⁵⁰ Ibn Umail even compares the gradual acquisition of wisdom, derived from the philosophers' stone, to the growth and maturation of fruit-bearing trees:

lapis igitur sapientum in ipso, & ex ipso perficitur radix & rami & folia & flores & fructus. Est enim sicut arbor, cujus rami & folia & flores & fructus sunt ex ea, & per eam & ad eam, & ipse est totum & ex ipso est totum. (176)

(the stone is therefore wisdom in itself, and from it are created the root, branches, leaves, flowers, and fruit. It is really just like a tree, whose branches, leaves, flowers, and fruit come from it, through it, and for it, and is both entirely the thing itself and from itself.)

Linked to this idea is the common trope of the alchemical spring. Like a gardener, an alchemist facilitates Nature's own work with the "craft of

mannes hand" (v.909), which, in the *Franklin's Tale*, is one who "so curiously / Arrayed hadde this gardyn, trewely" (v.909–10). In the context of the *Franklin's Tale*, Gerhard Joseph finds a similar parallel between the May garden and the "magyk naturel" of Orléans, which "now becomes the urban equivalent of the 'craft of mannes hand' that has wrought the worldly garden."¹⁵¹ Like the May gardener, the "philosophre" is not a creator but a shape-shifter of the protean natural world. This link between the Orléans alchemist and the May gardener is not merely ornamental. In the *Tale's* Prologue, the Franklin establishes a logical relationship between the "colours as growen in the mede," and, in the next line, the colors "swiche as men dye or peynte" (v.724–5). Furthermore, this reference to artistic skill is in relation to the "Colours of rethoryk" (v.726), the ornaments of a poet's art and artifice.

The relationship between Art, May gardens, and alchemy is made more patent in the *Roman de la Rose*. In fact, Jean de Meun introduces his famous passage on alchemy with a springtime scene painted on a knight's armor. Here, Art produces "d'autres colours piolez" (4.16044).¹⁵²

Beaus oisillons en verz boissous,
 De toutes eves les poissons,
 Trestoutes les bestes sauvages
 Qui pasturent par leur boschages,
 Toutes erbes, toutes floretes
 Que valleton e puceletes
 Vont en printens es gauz coillir,
 Que flourir veient e foillir,
 Oiseaus privez, bestes domesches,
 Baleries, dances e tresches
 De beles dames bien parees,
 Bien pourtraites, bien figurees

(4.16045–56)

(or beautiful birds in green groves; or the fishes of all waters; all the wild beasts that feed in their woods; all plants, all the flowers that little boys and girls go to gather in the spring woods when they see them in bloom and leaf; tame birds and domestic animals; balls, dances, and farandoles with beautiful and elegantly dressed ladies, well portrayed and well represented.)

Like the Franklin's "colours as growen in the mede . . . swich as men dye or peynte," the painted colors of Art in the *Roman* are the accidental forms of Nature. Jean then compares this painted garden scene "Seit en metaïl, en fust, en cire" (16057; represented, either in metal, wood,

wax) to Nature's "true art" of alchemy (i.e., "Alkimie est art veritable," 16084).¹⁵³ In other words, he makes the distinction between the superficial transformations of "Art" and the more fundamental transmutations inherent in Nature's alchemy:

Ou d'alkimie tant apreigne
 Que touz metauz en couleur teigne,
 Qu'el se pourrait anceis tuer
 Que les espieces transmuer,
 Se tant ne fait qu'el les rameine
 A leur matire prumeraine;
 Euvre tant come ele vivra,
 Ja Nature n'aconsivra.

(4.16065–72)

(She [Art] may learn so much about alchemy that she may dye all the metals in color—for she could kill herself before she could transmute the species, even if she didn't go to the extent of taking them back to their prime matter—but she may work as long as she lives and never catch up with Nature).

Similarly, the triple trope of gardener-poet-chemist in the *Franklin's Tale* reflects Chaucer's highly refined awareness of ontological questions regarding an artist's relationship to the natural world.

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In contrast to Dorigen's plaint to the rocks and her long contemplation on the suicide of virgins, she eventually fades into the background, at the poem's conclusion, of a male-dominated world of decision making. One critic has even argued that Arveragus trades Dorigen as an "object of exchange" in the moral economy of the tale.¹⁵⁴ But if we focus too narrowly on Dorigen's passivity and the Franklin's sudden disregard for her, then we miss entirely Chaucer's emphasis on her act of free choice. In other words, she willingly makes the decision to rely on Arveragus to determine her fate. The Franklin makes it clear that her complaint—"purposynge evere that she wolde deye"—lasts only "a day or tweye," but her husband in fact arrives "upon the *thridde* nyght" (emphasis mine). This noticeable difference of one day, I believe, implies that she makes the decision to postpone suicide in order to communicate her situation to Arveragus and seek his assistance. After this point, the Franklin naturally omits Dorigen from the tale's remaining action. After all, Dorigen is all

“innocence” (v.1601), and it is not critical that she navigate the moral topography of the tale’s ending. In fact, her decision to make a promise of “trouthe” to Aurelius “in pleye” had ultimately set in motion the poem’s action, so she cannot represent, as many critics would believe, a woman’s total objectification by a male-dominated society. As Cathy Hume has shown in her analysis of advice literature and letter collections, the actions of Arveragus and Dorigen may be justified with a proper understanding of medieval marriage ideals. For example, Arveragus’s conflicting attitudes toward private virtue—the desire to “take no maistrie” (v.747)—pitted against the public role of “the name of soveraynetee . . . for shame of his degree” (v.751–2) is in fact common practice in the Middle Ages and “would probably not have struck a medieval audience as hypocritical.”¹⁵⁵ Similarly, Leah Otis-Cour finds secular analogues and biblical passages concerning marriage to suggest that “Arveragus and Dorigen’s marriage agreement, far from constituting a naive pipe dream appropriate only to a twilight world, was indeed a model of conjugal relations familiar to Chaucer’s readers/listeners, practiced as well as preached in the late medieval world.”¹⁵⁶

Arveragus’s intellectual and emotional reaction to the immediate knowledge of Dorigen’s promise of “trouthe” presents us with a knight finding it increasingly difficult to maintain an unconditional moral code in a postlapsarian world of compromise and human choice. It is indeed tempting for Arveragus to fall back on a less demanding, more pragmatic code of conduct. Arveragus’s initial composure and soothing words—“Is ther oght elles, Dorigen, but this?”—followed by his sudden burst of weeping, reveals a dramatic transition tending toward, in the words of Kathryn Jacobs, “a certain recognizable humanity.”¹⁵⁷ Arveragus, she adds, is “a man with normal grief, who yet disregards that grief in making his decision—a man whose vehemence betrays an imperfectly suppressed emotion—this is a man who might provoke imitation” (Ibid.). It is significant that his famous declaration—“Trouthe is the hyste thyng that man may kepe” (v.1479)—immediately precedes his tearful expression in the next line (“he brast anon to wepe”). As I said earlier, the ideal of “trouthe” now appears to be on the verge of total annihilation. With the knowledge of disappearing rocks, Arveragus naturally fears that “trouthe,” too, can be voided in a single temporal instant. The words “trouthe” and “gentillesse” are verbal signposts for imagined events in the storehouse of memory. An *idea* cannot exist in the real world, but it can leave vague footprints and shadowy traces of its existence in the phenomenal world of material objects. In many respects, these ideals can be grouped in the same category as illusions and phantasms, which are liable to vanish in a flash with the clap of the magician’s hands. Arveragus’s burst of weeping

certainly dramatizes this potential for annihilation. The marriage vows of Arveragus and Dorigen, however, and the binding powers of truth are not wholly at the mercy of a magician's tricks or magical powers. Rather, "trouthe" here depends on the consequences of human choice. For Arveragus, this moment boils down to a decision to void "trouthe" altogether and save Dorigen's sexual chastity or to "kepe" the principles of truth intact and safeguard their own more profound understanding of their marriage vows. Arveragus's insistence that Dorigen keep her promise may appear as suspicious to many readers. But as Donaldson so aptly points out, "an ideal has no relevance unless we are willing to sacrifice our whole world to it."¹⁵⁸ Arveragus explains,

For God so wisly have mercy upon me
 I hadde wel levere ystiked for to be
 For verray love which that I to yow have,
 But if ye sholde youre trouthe kepe and save.

(v.1475)

His vehement insistence that Dorigen keep her word not only stems from his "verray love" for her, but also originates from the fact that their marriage vows are created from (and therefore dependent on) the actuality and execution of "trouthe." As many have said before me, the failings of Arveragus and Dorigen can be traced to their mutual love for one another. While both characters are imperfect, it does not follow that their marriage cannot be founded on a working principle of love and virtue in which imperfect beings continually strive for, despite falling short of that goal.

The clerk's annihilation of matter initiates a domino effect of noble actions that tend toward dynamic equilibrium. In other words, the contents of the "voyded" space are now reconstituted in the form of *gentillesse* and "trouthe." Soon after Arveragus orders Dorigen to the garden in order to fulfill her promise, the limelight falls on Aurelius when he intercepts her in town. Their verbal exchange on the high street is certainly a much-debated passage. Dorigen's mention of Arveragus, mingled with Aurelius's subsequent encomium to her husband as a model for *gentillesse*, need not support the critical interpretation that the male urge for competition in the tale's social economy singly motivates the squire's decision. This is supported by the fact that Aurelius does not boast about his own *franchise* to the clerk: he simply confronts him to request a payment extension. Indeed, Aurelius informs the clerk of his actions, his *gentil* act of forbearance, but this only occurs *after* the clerk directly and explicitly inquires, "Hastow nat had thy lady as thee liketh? . . . What

was the cause? Tel me if thou kan" (v.1589–91). Aurelius's decision to release Dorigen from her promise is unquestionably motivated by compassion. He is unequivocally struck by the spectacle of Dorigen's grief, talking "half as she were mad" (v.1511) and reflects on his own inward experience of love and mercy, "And in his herte he caughte of this greet routhe" (v.1520). His love for Dorigen, he comes to realize, transcends even "his lust" (v.1522) and desire for illicit sex. Rather, he learns that "in his herte [he] hadde greet compassioun / Of hire and of hire lamentacioun" (v.1515–16). Although he does not respond to Dorigen's first episode of grief, when her face turns pale from astonishment (v.1339–45), Aurelius likely misinterprets this outward sign as a feeling of surprise.¹⁵⁹ Shock usually precedes emotional grief, which then emerges more noticeably with prolonged inward reflection. Aurelius, however, is certainly drawn to pity Dorigen when her outward appearance and lamentable actions are significantly more noticeable (both visually and audibly). Aurelius experiences a kind of spiritual conversion after his exposure to the cherished ideals of Arveragus and Dorigen. One critic even finds a hagiographical parallel in Aurelius's response to the loving couple, who are "like those old martyrs in the saints' lives who inspire the repentance of their persecutors."¹⁶⁰

Aurelius begins to think of a plan of repayment for the philosopher. He resolves, "But nathelees, I wole of hym assaye, / At certeyn dayes, yeer by yeer, to paye, / And thanke hym of his grete curteisye" (v.1567–9). Like the analogy of Griselda to the "assayes" of gold coins made by the Oxford Clerk before the envoy to the *Clerk's Tale* (discussed earlier in this chapter), Aurelius will incessantly confront the philosopher in order to "assaye" his capacity for forgiveness. In fact, Chaucer begins to "assaye" all the characters in the tale until they finally experience a transmutation (or purification) via the Breton stone. Instead of paying the full amount of one thousand pounds of gold, Aurelius, in his closing speech, provides the philosopher with the wisdom of "trouthe fals" (v.1597), "gentillesse" (1595), "pitee" (1603), and "innocence" (1601). To put it another way, Aurelius makes his payment in wisdom as a substitute for material gold. The philosopher then tells Aurelius: "Sire, I releese thee thy thousand pound, / As thou right now were *cropen out of the ground*" (v.1613–14, my italics). Like "al the metal . . . that under erthe is grave" (*WBT*, III.1063–6), Aurelius's precious metal (his "thousand pound"), which is literally taken directly from beneath the earth's surface, is ultimately replaced by precious virtues that also appear to have suddenly "copen out" by the tale's conclusion.

Virtually all the main characters in the tale exhibit the attributes of an alchemist in that they desire to remove material impurities from the

natural world. The removal of the rocks in many ways serves as an incipient model for the individual transformations at the poem's ending. The word "transformation" is misleading, however. The repeated stress on *removal* most accurately characterizes the poem's main action. From one perspective, the alchemists believed that gold already existed in a piece of lead: when impurities from baser metals were stripped away, the nobler metals, gold and silver, remained. Jean de Meun articulates this alchemical process of removal and purification in the *Roman de la Rose*: "E tolir aus orz leur ordures / E metre les en fourmes pures" (4.16115–16; to take away the impurities from the impure metals and put them into pure forms). Similarly, "true" gold is already latent in the depths of the alchemist's soul, and the soul needs only to undergo the purgative process, removing surface impurities, in order to seek it out. Dorigen's grief acts to extinguish and *remove* Aurelius's carnal desires, enabling him to feel inward "compassioun" and "greet routhe." Once impurities are removed (i.e., the magician's greed, Aurelius's lust, and Arveragus's lapse of despair), then the potential for nobler deeds becomes an actuality. In the case of Aurelius and the philosopher, the action of removal unveils characters who are capable of experiencing the Christian virtues of compassion and forgiveness.

The black rocks provide the necessary catalytic action required for a domino effect of *fredom* following the main event of transmutation. While Aurelius initially plans to transmute the black matter into an act of illicit sex, he instead follows the example of Arveragus, who transmutes the "*hyeste rokke in Armorik Briteyne*" into an instance of *trouthe*, "the *hyeste thyng that man may kepe*" (v.1479, my italics). By contrast, the false Canon of the *Canon's Yeoman's Tale* offers a comic perversion of *trouthe*: "Trouthe is a thyng that I wol evere kepe / Unto that day in which that I shal crepe / Into my grave, and ellis God forbede" (viii.1044–6). Like the alchemist of Orléans, the Canon claims "to quyte" (viii.1055) the "*gentillesse*" (1054) and "*kyndenesse*" (1055) of the gullible priest by teaching him the secrets of his trade. For Chaucer's Franklin, however, "*Pacience and temperaunce*" both constitute a "*heigh vertu*" in matters of human experience (v.771–89). Arveragus transforms black matter (the rocks), transient material objects, into equally lofty yet now immaterial substances: the noble virtues of *trouthe*, *pacience*, and *temperaunce*, or more broadly, *gentillesse* and all its attributes. The stone thus transmutes Dorigen's false understanding of God's Providence into a multiplication of revelations that affect everyone around her. Inevitably, the *fredom* gains momentum after the transformation of the rocks, and the original terms of *trouthe* and *gentillesse* shift in scope and meaning with each subsequent transformation.

All things beneath the moon are imperfect and therefore strive for perfection. Human beings continually strive for their own spiritual perfection and use the *lapis philosophorum* as an agent of the soul's motion toward reform. This reading, I think, is not incongruous with Chaucer's satiric tale of counterfeiting and false alchemy (the *Canon's Yeoman's Tale*), for we witness "a steady development in the Yeoman, a development which reveals him to be a morally attractive person whose reform is likely to be permanent."¹⁶¹ In the *Franklin's Tale*, the internal transformations of each main character, coupled with the transmutation of black earth, is likened to the alchemist's desire for God's wisdom and grace. The fact that the transformation occurs during the season of "Nowell" in many ways suggests a *Lapis-Christ* allegory. For an alchemist, the incarnation, death, and resurrection of Christ is indeed the ultimate transmutation of human history. In this context, the tale's setting includes proto-Christians inhabiting a pagan world, but this is a joyous world of unknowing individuals teetering on the brink of salvation. Although the salvific process remains inadequate and falls short of a complete conversion, we nonetheless witness characters on the cusp of true wisdom, the source of which appears to be somewhere in the rocks (or at least in what they leave behind). The tale begins with Dorigen and her rocks, whose influence extend outward in radial fashion, affecting characters in England, Orléans, and Brittany.¹⁶² Ultimately, it is Dorigen who commits the rash promise. It is also Dorigen who actively communicates her predicament to Arveragus. Finally, it is Dorigen who goes to Aurelius with intentions to keep her "trouthe." Like the philosophers' stone, she has the privileged position as a catalyst for wisdom, transmuting everyone around her. In the end, Dorigen and her rocks initiate true reform, imparting wisdom to the alchemists.

CHAPTER 4

“AS LICOUR OUT OF A LAMBYC FUL FASTE”:

LOVE AND ALCHEMY IN

TROILUS AND CRISEYDE

Love and alchemy make strange bedfellows in medieval literature. In the thirteenth and fourteenth centuries, vernacular poets utilized the materials and methods of alchemy as a means of articulating the complicated process of falling in love. This poetic strategy was used by authors ranging from Jean de Meun to John Gower, who seamlessly weave long passages on alchemy into the fabric of their poetry. In the *Roman de la Rose*, for example, human bodies—afflicted by “lovesickness”—are understood in terms of alchemy’s furnaces and distillations: the god of Love, like an alchemist, operates the lover’s “athanor” (Arabic: *at tannūr*), an alchemical digesting furnace used for heating the alembic, which is made analogous to the lover’s own heart (3.6382–404).¹ Indeed, the final product of a courtly lover’s repeated bodily distillations is the refined tears of *fine amor*—the “purified” and perfected love.² Alchemy’s transmutations, Jean later argues, are vivifying in comparison to a painted scene of courtly ladies and handsome bachelors holding one another in love’s dance.³ In the *Confessio amantis*, Gower’s alchemy in Book 4 (lines 2457–632) also shifts in meaning within the context of *fine amor* and his discussion of the lover’s sloth. In sum, medieval poets would successfully amalgamate imagery drawn from both alchemical treatises and the well-known handbooks on love, as the behavior and experience of medieval lovers in many ways reflected the art of alchemy itself. This literary tradition perhaps originates from the famous *Epistola solis ad lunam crescentem*, an allegorical poem known by Chaucer (see chapter 3), which compares the chemical combination of alchemy’s metals to the bonds of love between a wife and husband, embracing one another in sexual union. Finally, the

literary pastiche that is the *Canon's Yeoman's Tale* reevaluates the aims of alchemy in terms of courtly romance. In other words, we can assume that Chaucer incorporates into his works a richly complex metaphor regarding the so-called “alchemy” of love, which duly enhances his primary theme of mutability.

Judith Scherer Herz shows how the Yeoman consistently uses the vocabulary and scenes from the romance genre to describe his profession. Like the narrator of *Troilus and Criseyde*, the Yeoman “seems to delight in the double phrase and the stock epithets from Romance.”⁴ For example, the Yeoman is one who “loveth daliaunce” (VIII.592) and “kan of murthe and eek of jolitee” (VIII.600). Moreover, he identifies his Canon as “my lord and my soverayn” (VIII.590). Herz concludes that this narrative strategy

has a normative function in that it recalls a world where exploits are grand in scale and where one takes extravagant risks for extravagant rewards. The world of Romance resembles the world of alchemy in its goals . . . The seeking after the “slydyng science” is the one romance in the life of the Yeoman. And the traditional heroine of Romance, elusive, changing of face, a temptress, and a setter of impossible tasks, is something like the mistress who has dominated the Yeoman's life.⁵

Like the comic pairing of the *Knight's Tale* with the *fabliau* of the *Miller's Tale*, the jarring combination of two seemingly distant worlds—alchemy and courtly romance—complicates medieval conceptions of human love. Chaucer artfully compares the images of a frustrated alchemist in pursuit of the elusive stone to a sad lover lamenting his unattainable Lady:

Or for to speke of love and wommanhede,
Ne knyght in armes to doon an hardy dede,
To stonden in grace of his lady deere,
Than hadde this preest this soory craft to leere.

(*Canon's Yeoman's Tale*, VIII.1346–9)

The science of alchemy in the Tale of the Canon's Yeoman entails a “lusty game” (VIII.1402) in which “a mannes myrthe” (VIII.1403) hangs in the balance. The Canon's priest engages in this lusty game of courtly love, where “us moste putte oure good in aventure” (VIII.946). The priest then “faste blew the fir, / For to come to th'effect of his desir” (VIII.1260–1), which sounds, arguably, a lot like the narrator of *Troilus* speaking of his protagonist's desire for Criseyde. On this note, the Yeoman's lord recalls Pandarus in his encouragements to the lovesick alchemists to “plukke up

youre hertes and beeth glad and blithe” (viii.937). Like Pandarus’s call for secrecy in Troilus’s illicit love affair, the Yeoman safeguards alchemy’s secrets against those who might abuse the venerable art. Another critic has also seen the shadows of Pandarus lurking in the blind alleys of the *Canon’s Yeoman’s Tale*. Michael A. Calabrese, in his brilliant essay on Ovidian alchemy, notes how the deceitful Canon borrows the language and discourse of “Ovidian craft, the lies, the words that invigorate Ovid’s love system in that handbook of romantic alchemy, the *Ars Amatoria*.”⁶ He then asks, “Is the Canon then a type of Ovidian artist, a chemical Pandarus?” Ironically, as we shall see, it is precisely Pandarus who is the “chemical” artist *par excellence*.

In the Ovidian context of “romantic alchemy,” Pandarus persistently desires to “werke in this matere” of Troilus and Criseyde (iv.651). This is not merely the amatory “matere” of a poet who shapes his narrative. Indeed, the poem’s repetition of “*this matere*” retains its corporeal meaning as the *physical* matter that fills the universe. The repeated emphasis on “this matere” is perhaps more related to the kind of matter we find in the *Canon’s Yeoman’s Tale*—that is to say, “oure materes that lyen al fix adoun” (viii.778–9) and “oure matires sublymyng” (viii.770). Significantly, Troilus becomes the ready-matter for alchemical distillation: “This Troylus in teris gan distille, / As licour out of a lambyc ful faste” (iv.519–20). Troilus’s own body functions as an alchemical alembic in which the tears of his heart sublime like vapor and then distill as purified quintessence or “licour.” While this stylized alchemical reference is unquestionably explicit, it is also worth considering the implications of its meaning in the context of Book 4 and the poem as a whole.

I will examine Chaucer’s reference to alchemy as part of a larger scheme in the *Troilus*. In fact, a network of distillation imagery in the poem follows the temporal progress of our eponymous hero’s alchemical purification. However, Troilus’s material body also wastes away with each repeated distillation. The language and imagery of Chaucer’s alchemy occurs elsewhere in the *Troilus*, not only as a metaphor for romantic love but also as an emblem for the poem’s central theme of earthly mutability. By focusing on the mutual and dynamic embeddedness of alchemy and courtly love rhetoric, we can deepen our understanding of Troilus’s self-conscious interiority as it relates to the labile state of his physical, elemental, and alchemical body. There is an astonishing lack of critical energy devoted to the topic of alchemy outside the confines of the *Canon’s Yeoman’s Tale*. Given that Chaucer makes explicit references to alchemy in the *Troilus*, it is more surprising that critics do not address the subject of mutability in the poem in terms of the principles and dictates of alchemy

that appear to govern the sublunar realm of change. In fact, an in-depth analysis of Chaucer's alchemical lexicon from the *Canon's Yeoman's Tale* provides the reader with an intriguingly new reading of the *Troilus*. As will be seen later in this chapter, Pandarus replicates the actions of an alchemist—one who procures the chemical wedding between the sun and moon within the inner chambers of an alembic—when he combines the bodies of Troilus and Criseyde in physical union within his darkened bedchamber. As Richard Kieckhefer points out, chemical combination was the “alchemists’ dream”: the desire to “recombine the elements to obtain other, higher forms of matter.”⁷ Similarly, Pandarus manipulates and recombines the chemical bodies of Troilus and Criseyde—the alchemist's raw material—in order to produce a higher form.⁸ Moreover, we should not overlook intriguing connections between chemical combination and the bonds of love.

Although Chaucer frequently uses Fortune and the image of her wheel to foreground his analysis of earthly mutability in the *Troilus*, there is merit to Larry Scanlon's comment, “Too much criticism of this poem has considered Chaucer's many invocations of Fortune a straightforward gloss on the poem's narrative.”⁹ Rather, the figure of Fortune is in many ways an afterthought prompted by a perplexed narrator writing about love and its apparent contradictions. He asserts the imagery of Fortune in the poem as a method for rationalizing the multiple permutations that he observes in Troy.¹⁰ In addition to the medieval fascination with Fortune, which has been widely discussed, the complex philosophical value of alchemy in later medieval thought allows for a highly nuanced reading of the physical, spiritual, and psychological transformations that shape the narrative of *Troilus and Criseyde*. This raises the question of why Chaucer uses alchemy, alongside Fortune, as a theoretical model with a philosophical valence to describe the transformative power of human love. In the context of the “sublymed mercurie” (viii.774) of the *Canon's Yeoman's Tale*, I will also ask why Chaucer, in writing about Troilus's ascension, incorporates ambiguous details surrounding the eighth sphere (the sphere of Luna) and “Mercurie” (v.1827). Finally, I will consider Chaucer's reading of alchemical poems and treatises—especially those we find expressly quoted in the *Canon's Yeoman's Tale*—in order to propose both a natural/secular and an allegorical/sacred reading for the alchemy we find in the *Troilus*. Needless to say, Chaucer alters his narrative source, Boccaccio's *Il Filostrato*, in order to include alchemy. An alchemical reading of the *Troilus* (though I do not intend to provide an exhaustive one) will broaden the Boethian trajectory of the hero's ascension and enrich the poetic texture of the narrative with symbolic meaning.¹¹

“Rhetorical Alchemy” and the Language of Romantic Love

The comparison of Troilus’s distilling tears to the extraction of *licour* from an alembic, we shall find, belongs to a network of distillation imagery throughout the *Troilus*. While Chaucer explicitly introduces the stylistic register of alchemy in Book 4, it is, in fact, central to a framework of alchemical cross-references that allows us to reflect upon the relatedness of alchemy to the language of romantic love. While the Yeoman of the *Canon’s Yeoman’s Tale* borrows the familiar words and phrases from the conventions of courtly literature and romance to inform his alchemical discourse, the same method also applies to Chaucer’s *Troilus and Criseyde*, but in reverse. This chapter will argue that the language of romantic love in the poem consciously draws from the poet’s unique alchemical lexicon, the sort articulated by the alchemical Yeoman.

Alchemy’s textual and interpretative transmutations are, in the view of Mark J. Bruhn and many others, “a metaphor for Chaucer’s poetry.”¹² Like an alchemist, Chaucer himself delights in tempering two seemingly incompatible poles of experience: alchemy and romance. In comic irony, this poetic strategy is rejected by Pandarus himself, who warns Troilus not to “usen termes of phisik / In loves termes” (II.1038–9). By contrast, Chaucer has made extensive use of medical imagery throughout the *Troilus* to describe the hero’s “lovesickness.” It is not surprising, then, that Chaucer also consciously applies the vocabulary of alchemy precisely “in loves termes.” This topical mixture produces a sort of “chemical” change within the literature; the poet’s physical combination of specific words from seemingly unrelated lexicons transmutes the original semantic and literary meaning of the text. As early as Book 1, for example, Troilus increasingly develops symptoms of lovesickness:

And fro this forth tho reffe hym love his slep,
 And made his mete his foo, and ek his sorwe
 Gan multiplie, that, whoso tok kep,
 It shewed in his hewe both eve and morwe.
 Therfor a title he gan him for to borwe
 Of other siknesse, lest men of hym wende
 That the hote fir of love hym brende.

(I.484–90)

There is a possible allusion to alchemy in the way Troilus’s sorrow “Gan multiplie,” which brings to mind Chaucer’s frequent and specific use of the word to mean alchemical transmutation (“Lo, which avantage is

to multiplie!” *CYT*, VIII.731). What I also want to emphasize here is the striking similarity between the alchemist’s workings in the laboratory and the actual process of falling in love. Like the Canon’s Yeoman, Troilus experiences a change of “hewe” from his exposure to “the hote fir”: alchemists, too, “han been brent, / Allas, kan they nat flee the fires heete?” (*CYT*, VIII.1407–8). The “diverse fires maad of wode and cole” (*CYT*, VIII.809) in the alchemical furnace of the *Canon’s Yeoman’s Tale* likewise cause the multiplication of Troilus’s burning desire, for “Thorough more wode or col, the more fir, / Right so encrease hope, of what it be, / Therwith ful ofte encresseth ek desir.” (*Tr.*, II.1332–4). What is more, the description of Troilus’s sweat, as Charles Muscatine put it so precisely, is not unlike the drops of sweat produced by the Yeoman’s alchemists.¹³ However, Chaucer links alchemical terms to courtly love discourse very early in the poem, establishing a connection between love’s internal emotions and alchemy’s external process on the body. In another passage in Book 1, Troilus also “gan multiplie” (or transmute) his woe into “salte teres”:

He spak, and called evere in his compleynte
 Hire name, for to tellen hire his wo,
 Til neigh that he in salte teres dreynte.
 Al was for nought: she herde nat his pleynte;
 And whan that he bythought on that folie,
 A thousand fold his wo gan multiplie.

(I.541–6)

Similar to the process of alchemical multiplication, Troilus’s “wo gan multiplie” with the distillation of salt tears. The poem’s repeated emphasis on *salt* tears points to the fact that “common salt,” as Albertus Magnus claims, “is the key to this art [alchemy], because it opens and closes all things, and no work of the Alchemist can be completed without it.”¹⁴ Of course, these alchemical tears in Book 1 anticipate the alembic metaphor in Book 4 when “This Troylus in teris gan distille, / As licour out of a lambyc ful faste” (IV.519–20), which I shall return to later. On the one hand, Troilus’s “process” of love is nearly instantaneous: once his gaze is directed at Criseyde as the fixed object, the elusive Lady, “sodeynly he wax therwith astoned” (I.274). On the other hand, the inner mutations of Troilus’s character occur gradually over time. Chaucer is interested in the consequences of a chemical world on the interiority of the courtly lover. Alchemy helps to dramatize the human experience of change: it accentuates the internal conflict pitting a working ideology of stable universals against the ongoing perception of individuals, the shifting things

(or *res*) that metamorphize without meaning and then cease to be. This poetic strategy illumines the dynamic interrelatedness between chemical change and the individual conceptions of private self, especially in the context of human love.

As I will demonstrate, over the course of the poem, the poet-narrator consciously draws our attention to the stylistic register of alchemy in the context of the courtly love tradition. Criseyde, for example, is as elusive as the “slidyng science” of alchemy (*CYT*, VIII.732). In fact, she, too, is “slydyng”: Criseyde’s affections for Troilus and her intrinsic character transmute throughout her seemingly inexplicable “slydyng of corage” (*Tr.*, v.825). Like the philosophers’ stone of alchemy, which “slit away so faste” (*CYT*, VIII.682), the elusive Criseyde slips away from Troilus. Her betrayal motivates Troilus to ponder, “O my Criseyde, allas, what *subtilte*, . . . what *science*, / What wratthe of just cause have ye to me?” (v.1254–6, emphasis mine). I will argue that it is precisely the subtle science of alchemy that structures the poem’s action. Perhaps as a method of drawing attention to the mutability of her spirit or Criseyde’s slow process of becoming “transmewed” (*Tr.*, IV.830), Chaucer’s diction remains strongly alchemical throughout the falling action in Books 3, 4, and 5. Incidentally, Jill Mann uses the word “transmutations” in her examination of love’s imperceptible “proces” in the poem—that is, “the inevitable transmutations of human emotions and experiences in time.”¹⁵ Though she mentions this only in passing (and without alchemy in mind), Mann’s point is one that merits investigation. The gradual, opaque process of Criseyde falling in love is, according to my view, an alchemical process in the most literal sense.

The White Eagle

In fact, Criseyde’s climactic moment of becoming “transmewed” occurs much earlier with her dream of the white eagle, a much-discussed episode that scholars traditionally associate with sexual penetration and male aggression. However, the alchemical imagery of this symbolic dream also lends itself to another layer of interpretation. Indeed, the “white eagle” (*uqāb abyad*) appears in Arabic alchemical treatises of the Middle Ages.¹⁶ Within the common stock of alchemical imagery, the symbol for mercury is the “white eagle,” the pure essence or spirit that is consumed in the crucible as it sublimates into a white cloud as a consequence of heating by fire.¹⁷ When Criseyde’s heart experiences the initial fires of love—here, equivalent to the fires that heat the substance inside an alchemist’s vessel—the claws of an eagle tear her heart from her chest (i.e., it is sublimed) and exchange it for Troilus’s heart. In Criseyde’s dream, the “eagle feathered whit

as bone” (II.926) unequivocally symbolizes Mercurius (see also figure 3.4), an alchemical figure who unites the male and female in the chemical wedding, an alchemical motif made known to Chaucer by the “book Senior” of the *Canon’s Yeoman’s Tale* (VIII.1450). As I discussed in chapter 3, Chaucer’s “book Senior” is the *Epistola solis ad lunam crescentem*, the Latin version of an allegorical poem originally composed in the tenth century by Muhammad ibn Umail, known to the Latin West as Senior Zadith: Chaucer, in fact, paraphrases a direct passage from ibn Umail’s own commentary on the poem.¹⁸ The “book Senior” includes a prologue, followed by the *Epistola solis* and a subsequent commentary on the poem itself. In the prologue, Ibn Umail visits an Egyptian temple and sees the image of eagles holding bows in their talons. The first line of the treatise begins,

Intravi ego & Oboël charissima barba in domum quandam subterraneam & postea intui ego & Elhasam universos carceres Joseph ignitos, & vidi in tecto imagines novem aquilarum pictas, habentes alas expansas, ac si volarent, pedes verò extentos & apertos, & in pede uniuscujusque aquilae similitudo arcus ampli, quàm solent ferre sagittarii. (147)

(I entered the Birba and a certain subterranean house, and afterwards I and El Hassan saw all the fiery prisons of Joseph, and I saw on the roof the nine painted eagles with their wings expanded as if flying with truly stretched and extended claws, and in the talons of each eagle was a big bow, such as is also used by those who shoot with a bow.)

Later in the commentary of his own poem, Senior explains that the eagles holding bows in their talons, “such as is also used by those who shoot with a bow,” are meant to signify the volatile substance of alchemy: “Per Aquilas substantiam volatilem intelligas” (196). To put it simply, alchemists readily relate the actions of the white eagle, the volatile substance, to the ascension of the spirit. From this perspective, it is entirely appropriate that Chaucer’s white eagle has the heroine’s volatile heart (or *spiritus*) torn from her body (*corpus*). One crucial difference, however, is that Senior’s eagles use their talons to grasp a bow, as opposed to a lover’s heart. In his commentary, the bow is said to represent power and strength.¹⁹ Yet, the significance of the eagle’s bow in an alchemical poem describing the sexual union of the sun and moon inside the “house of love” (*domus amoris*) merits further comment. In this context of Senior’s erotic poetry, the bow of the eagle is closely related to Cupid’s bow.²⁰ Indeed, Lyndy Abraham’s monumental study of alchemical imagery in the Western tradition describes the white eagle as “the priest who ties the marriage knot. . . and as the gum or glue which binds body and spirit (or soul) in the chemical wedding.”²¹

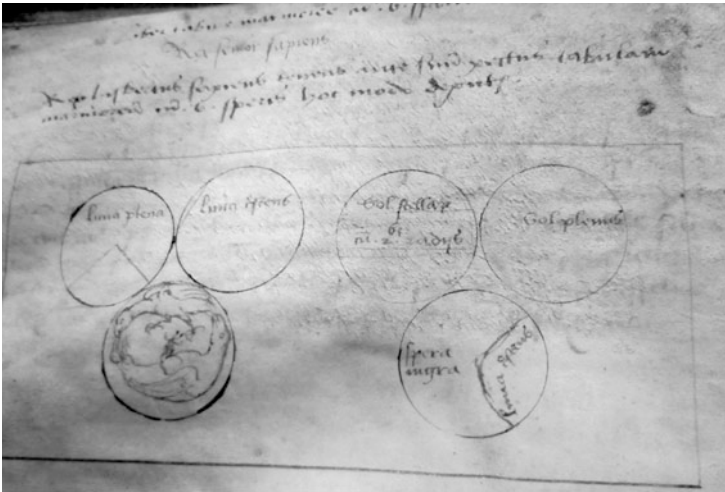


Figure 4.1 Trinity College, Cambridge MS O.2.18 (James’ catalogue, 1122), fol. 39v. A later illustration of the two birds of alchemy in the bottom-left circle as just described by Senior (fol. 39r; *Erant autem illae duae aves coligatae, homogeneae, depictae in una sphaera*) with various phases of the moon. By permission of the Master and Fellows, Trinity College, Cambridge.

More importantly, the winged birds of alchemy are characteristically violent birds of prey who viciously devour the flesh of a wingless creature (i.e., the fixed matter). In this allusive context, Chaucer depicts the white eagle’s actions with acute ferocity: the white eagle in Criseyde’s dream “Under hire brest his longe clawes sette, / And out hire herte he rente, and that anon” (II.927–8).

The *Epistola solis* also describes such an image of two birds (one winged, the other wingless) on a tablet in the temple:

Imago duarum avium in inferiore parte ejus pectore inclinato, quarum avium una habebat alas abscissas, & altera habens alas duas, & utraque tenebat rostro caudam alterius, ac si volans vellet volare cum altera, & illa vellet retinere volantem secum. Erant autem illae duae aves coligatae, homogeneae, depictae in una sphaera, quasi imago duae duarum in uno (A picture of two birds having their breasts [contiguous] to one another. One of them had both wings cut off, and the other had both wings [intact]. Each of them held fast the tail of the other by its beak, as if the flying bird wished to fly with the mutilated bird, and the mutilated bird wished to keep the flying bird with itself. These two linked birds that were holding one another, of the same sort, appeared like a circle, a symbol of “Two in One.”) (147)

Moreover, Senior specifies that the two birds represent a male and a female in chemical union: “Et scito, quod istae aves sunt masculus & foemina, quos indicant sapientes, & ipsi sunt Lapis eorum, cum desponsati fuerint & coagulati, sicut vidisti figuram eorum, quod coagulati erant & conjuncti, & facti una res” (160; Know, because these birds are a male and a female, which the wise men indicate, and they are their Stone, since they are together devoted and formed together, just as the image you saw, because they are formed and joined together, and become one thing.) This Neoplatonic notion of the unity of all matter (i.e., “duae duarum in uno”) is not unlike the circular motion implied by the exchange of hearts in *Troilus*. While Troilus is analogous to the winged bird, Criseyde fittingly represents the mutilated, wingless creature as described in Senior’s image of the male and female, “together devoted . . . joined together, and become one thing.” Like the circular motion of exchanging hearts in Criseyde’s dream, Senior instructs the alchemist to cast the female over the male, “et ascendit masculus super foeminam” (160; and the male will ascend over the female). In short, Criseyde’s allusive dream of the white eagle—the volatile “white cloud” of alchemy—prepares Chaucer’s readers for the courtly version of the chemical wedding, which occurs in Book 3.

**“Lat me werke in this matere”: The Chemical
Combination of *Troilus* and *Criseyde***

The details and circumstances surrounding the consummation scene in Book 3 provide Chaucer’s audience with allegorical readings of Pandarus as an alchemist. Pandarus urges Troilus, “and shortly, brother deere, / Be glad, and lat me werke in this matere, / For I shal shape it so” (iv.650–2). Like an alchemist, Pandarus aims to manipulate physical matter in order to “shape it” according to his vision for change. It is not always clear in the poem what is meant by “this matere,” but Pandarus’s overall concern never deviates from the real, corporeal “matter” of Troilus and Criseyde. After all, Troilus reaffirms the conventional truism that “matere occupieth place” (v.1322)—that is, as *physical* objects inhering in space. Still, the frequency of the word “matere” in the poem merits clarification. Initially, the narrator suggests to his readers that “matere” (or “my matere”) refers specifically to his story of “double sorwes” (i.52–6). While “matere” might be used to signify an abstract concept or theoretical situation, such as the “double sorwes,” it is still appropriate to abstract from “matere” actual, real *things* with spatial dimensions. The conventional phrase “as touchyng this matere” (iii.432) occurs frequently in the poem and implies a physical thing that is specifically

liminal or corporeal within the cosmic plenum.²² The consistent handling of “matere,” I think, reflects anxiety in the poem toward all physical substances that undergo constant, chaotic change. Over the course of the poem, Chaucer narrows the meaning of “matere” with the use of demonstratives: “matere” evolves into “*this matere*”—that is, something even more tangible, tactile, and malleable. Still, the word does not lose its general sense. Similarly, in the *Canon’s Yeoman’s Tale*, Chaucer frequently makes reference to “materes” in order to signify the broad, all-encompassing sense of Nature’s materials. Like an alchemist wanting to protect alchemy’s secrets concerning the manipulations of matter, Pandarus warns Troilus “To holden *secree* swich an *heigh matere*” (III.286, my italics). Pandarus, as Nature’s skillful assistant, commits himself to the task of conjoining two material bodies, *this matter* of Troilus and Criseyde. Ultimately, however, Pandarus will resemble a failed alchemist, about which we shall be saying more later on.

In the context of Pandarus’s physical handling of bodily matter—the sexual and chemical union of the two lovers in Book 3—it is highly significant that Chaucer repeatedly draws the reader’s attention to the special conjunction of the sun and moon:

Right sone upon the chaungynge of the moone,
Whan lightles is the world a nyght or tweyne,
And that the wolken shop hym for to reyne.

(III.549–51)

The poet describes the arrival of a new moon—that is, “Whan lightles is the world a nyght or tweyne.” The sun and moon align in conjunction, causing the moon to disappear from our sight, shrouded in total darkness. In fact, Chaucer even provides a method for determining the time and position of this important event in his *Treatise on the Astrolabe*. When the sun glides into the same astrological house as the moon, the two planetary bodies unite in conjunction. Consequently, the sun and moon remain in close proximity to each other for “a nyght or tweyne.” This astrological phenomenon happens throughout “the chaungynge of the moone.” As we have seen in chapter 3, the idea of aligning in conjunction two planetary bodies of opposite sex is the celestial equivalent to the carnal union of human bodies on Earth. It is worth repeating that this metaphor occurs explicitly in Chaucer’s *The Complaint of Mars*. In this allegorical poem, the planets Mars and Venus consummate their love when they meet within the same astrological mansion, “That Mars shal entre, as fast as he may glyde, / Into hir nexte paleys . . . til she had him atake” (53–5).

Significantly, the planetary conjunction of the sun and moon is central to the theory and practice of medieval alchemy. During the new moon, the masculine sun penetrates the same astrological *domus* as the feminine moon; alchemists manipulate this sexual metaphor to express the mysterious union of sulphur and mercury within the interior chambers of the alembic. Although the allegorical coupling of the sun and moon is commonplace within medieval alchemical texts, Chaucer's most proximate source for this trope is very likely, once again, the "book Senior" (ibn Umail's *Epistola solis*). In this allegorical poem on alchemy, the feminine moon enters the same astrological mansion as the masculine sun, and this intimate proximity allows for their consummation to take effect (quoted once again below):

When we will be united in an equality of status in the house, in which there is nothing else except that the heavy has the light with it, in which we will remain, we will be just like a woman and her husband who live there, and that is true from our speech. And, O Sun, when we will have been united, we will be staying in the belly of this closed house, then I will receive spirit from you by adoring you, although you will take away my beauty and through your closeness I will become thin and we will be heightened in a spiritual exaltation when we ascend the order of the elders. The lamp of your light will be poured into my lamp, and of you and of me there will be a mixture, as of wine and sweet water. . . . And I will stop my flow, after you will have been clothed in my blackness, in the color which arises like ink after you have loosened and I coagulate. When we will have entered the house of love, my body will coagulate, and you will be inside my emptiness. (149)

The *Epistola solis* presents an allegory for the chemical combination of sulphur and mercury in terms of the sun and the moon, respectively. This metaphor for combination, presented in sexual and chemical terms, develops extensively throughout the Middle Ages, with the underlying premise "sulphur dicatur esse in commixtione metallorum quasi substantia seminis paterni, et argentum vivum sicut menstruum quod coagulatur in substantiam embryonum" (in the constitution of metals Sulphur is like the substance of the male semen and Quicksilver like the menstrual fluid that is coagulated into the substance of the embryo).²³ These two oppositional substances combine to make a metal/embryo. In Senior's *Epistola*, the physical bond of love engendered by the mutual embrace of the solar husband and the lunar wife symbolizes the chemical combination of sulphur and mercury.

The fourteenth-century Petrus Bonus quotes from and provides commentary on the *Epistola solis*, placing emphasis on the new moon as a sexual metaphor for chemical combination. He notes how:

Ex quibus omnibus liquide patet quomodo sol et luna sunt eiusdem naturae et quod luna praecedit solem et ordinatur ad ipsum et quomodo sol est occultus in luna et quomodo de ventre lunae sol extrahitur. Ideo dixit Senior quod sol est oriens in luna crescente

(From all this it appears clearly how the sun and the moon are of the same nature and that the moon goes before the sun and is ordered with respect to it, and how the sun is hidden in the moon and how the sun is extracted from the body [literally, “belly”] of the moon. Therefore says Senior, that the sun rises in the waxing moon.)²⁴

Not only does this astrological event occur during the consummation scene in Book 3 of the *Troilus*, but in the context of Senior’s chemical and planetary wedding, it is also worth noting that Troilus compares himself to the solar body: “The sonne, which that al the world may se, Saugh nevere yet my lif, that dar I leye, / So inly fair and goodly as is she / Whos I am al, and shal, tyl that I deye” (III.1604–7). Reminiscent of the Aurelius–Sun parallelism we see in the *Franklin’s Tale*, Troilus also compares his present circumstance with Criseyde to the situation of Aurora abed with Titan (the Sun), “That hast the dawying al nyght by thi syde, / And suffrest hire so soone up fro the rise. . . . What, holde youre bed ther, thow, and ek thi Morwe!” (III.1466–9). Of course, these lines have always previously been regarded as a form of the farewell “aubade,” but these materials can also be seen to have a new (marital) dimension. This sexual metaphor—the pairing of “the sonne Tytan” (v.1464) with Aurora, the “dawying”—instantly recalls the alchemical treatise entitled *Aurora consurgens* (Rising Dawn). The author of the *Aurora* informs us that he names his treatise after the rising dawn because it signifies alchemical renewal. Needless to say, the “dawning” in Book 3 of *Troilus* marks the arrival of a new, higher form of matter. Whether or not the two lovers represent specific planetary bodies, however, is irrelevant. What is important here is the fact that Chaucer draws special attention to the new moon—“Whan lightles is the world a nyght or tweyne” (analogous to the timing of Senior’s sun “clothed in my [the moon’s] blackness”)—in order to suggest an alchemical event, the chemical combination of “this matere.” The conjunction of Saturn and Jove, we shall find, serves to heighten this alchemical imagery.

Chaucer makes allusions to alchemy with the image of the new moon’s horns and the mercurial, smoky rains from heaven, caused by the conjunction of Saturn and Jove:

The bente moone with hire hornes pale,
Saturne, and Jove, in Cancro joyned were,
That swych a reyn from heven gan avale

That every maner womman that was there
 Hadde of that smoky reyn a verray feere.

(iii.624–8)

The bent, horned moon here is a symbol for mercurial silver, the codified image used profusely in alchemical treatises. Furthermore, the appearance of the new moon suggests traditional imagery associated with the so-called “alchemical wedding.” The imagery of “smoky reyn” points to the mercurial rain of alchemy “from heven,” stated as such at several points in the *Epistola solis*: “And from the ash there goes up a living and quickening rain, which comes down from heaven”; “Rain is the



Figure 4.2 British Library, Egerton 845 (fol. 16v). A man and women embracing in alchemical union with smoky rain and an eagle representing sublimation (England, first half of the sixteenth century).

distillation of their waters”; and “When the tinctures have progressed, and rain falls from the sky.”²⁵

Unlike the language of purification—the distilled and “refined” love of alchemy—the lovers here require a “smoky” substance for the chemical work to continue unseen. Moreover, the planetary alignment of Saturn and Jove in Cancer is highly significant in light of Constantine’s *Liber secretorum alchimie*, which, at several points, discusses the importance of this conjunction as it relates to the operations of alchemy.

This planetary conjunction, which does not appear in the *Filostrato*, has perplexed Chaucerians as to its exact purpose and meaning in the poem. This is made even more intriguing, given that its real occurrence is extremely rare. Critics generally acknowledge that the conjunction in Book 3 is to be understood as a malevolent one (where the malign effects of Saturn outweigh the benevolent influence of Jupiter). As the endnotes to the *Riverside* mention, it appears in the chronicles of Walsingham as causing “a very great disturbance of kingdoms,” as well as in Bradwardine’s *De causa Dei*, which mentions its occurrence at the time of Christ’s birth. Jill Mann, however, is correct in saying that critics focus too heavily on using this passage in the *Troilus* in order to date the composition of the poem while neglecting to address its literary value.²⁶ The poetic function of this planetary conjunction, I believe, serves to highlight the actual process of transmutation in Book 3.

Master Constantine of Pisa, who composed the *Liber secretorum alchimie* in the thirteenth century, draws special attention to the conjunction of Saturn and Jove in his study of alchemy. The conjunctions of Saturn and Jove, he explains, exert powerful effects on matter, causing profound changes to occur throughout the natural world. According to his argument, the zodiacal house in which the conjunction occurs will determine whether or not, in the case of generating new metals, substances unite to or repel from one another. By way of example, he writes,

Sequitur de coniunctionibus planetarum in signis a quibus habent fieri magne mutationes aeris et generationes corporum inferiorum. Unde Ptholomeus: “Scito quod quando fuerit coniunctio iouis et saturni in ariete, tunc fiunt generationes extraordinarie in aere, maxime locuste, et magne musce et scarabes, et rubeae uesice in hominibus, et antraces, leonine elephantite, morphee rubeae, febres putride.” Generatio cupri et ferri et plumbi tunc inutilis propter saturnum qui est in ariete in domo martis, quia mars habet odio saturnum, et e conuerso. Habet etiam saturnus odio iouem, et e conuerso. Ideo non fit coniunctio plumbi, ferri et cupri ad inuicem, sed quidquid contingat

(We will now proceed to the conjunctions of the planets in the signs, which cause great changes in the air and generate the lower bodies. Whence

Ptolemy <says>: “Know that when there is a conjunction of Jupiter and Saturn in Aries, extraordinary things are generated in the air, the biggest locusts, big flies and beetles; red blisters and boils on humans, leontiasis, elephantiasis, rubescent morphea and putrid fevers.” The generation of copper, iron and lead is then useless, because Saturn is in Aries in the House of Mars: and Mars and Saturn, Saturn and Jupiter repel each other. Therefore, lead, iron and copper cannot be joined together, but each is produced [separately].²⁷

In the above example, Constantine uses apocalyptic language to describe how Saturn and Jove will generate new substances on Earth when the planets are aligned. Depending on the zodiacal house (in the above example, “Aries”), specific metals either join together in union or are produced separately. Indeed, Constantine correctly attributes the house of Cancer to the *domus lune* (house of the moon), noting that it is a good quarter for the moon (*quadratura bona*). He adds, “Etiam, quantumque luna fuerit in quadraturis bonis, tunc omnis alchimie operatio est bona, ut congelare, humare, et cetera” (Indeed, whenever the moon is in a good quadrature, all alchemical operations go well—congealing, inhuming, and so on).²⁸ Importantly, the *Troilus* passage in Book 3 suggests that Jupiter, Jove, and the moon are all in alignment within the house of Cancer. Pandarus’s new moon, therefore, is in a propitious house for alchemical operations to go well, coupled with the powerful effects of Saturn and Jove, also in conjunction. At the very least, we can expect, as stated by Constantine, that the conjunction of Saturn and Jove will profoundly influence the sublunar region, generating new forms of matter.

Later in the treatise, Constantine also instructs the reader to make use of Saturn and Jove in order to reduce the sun (gold) and the moon (silver) to the *primam materiam* (mercury):

Profundatio ergo est et significatur per ethymoloiam [profundatio est id est] prorsus fundatio, id est funditus immutatio cum partibus resolutio, inmutando in aliud quod ante non fuit et sic perpetuando, quia numquam potest fieri perpetuatio nisi precedat profundatio. Unde profundatio est sophisticorum euacuatio, quia omnis uana est actio et inutilis operatio in alchimia nisi mediante profundatione reducendo corpus, siue corpora solis et lune [et] in primam materiam que est mercurius, per congelationem et per humationem cum ioue et saturno; mediante ioue a suis sordibus purgato, et cum suo spiritu +soli radio+ mediante. Et hoc spectat ad solem habendum. Et <ad> lunam conficiendam necessaria est proportio mercurii, lune et saturni, et cum suo spiritu alkatar albo distillando

(*Profundatio*, as its etymology indicates, is *prorsus fundatio*, that is fundamental change, with the parts separated and changed into something that

did not exist before, and thus bringing about permanent change, since no lastingness can be effected without previous fundamental change. Now fundamental change is the removal of sophistry, for every action is futile and every alchemical operation useless unless the body be reduced by founding—as when the bodies of the Sun and Moon are reduced to primary matter, which is mercury; by congealing, by inhuming, with Jupiter and Saturn; with Jupiter being cleansed of its impurities, and with its spirit *soli radio* [in the rays of the sun]. This refers to procuring the Sun while the confection of the Moon requires <equal> proportions of mercury, Moon and Saturn, distilling together with its white spirit *alkatar*).²⁹

Despite the ambiguity of terms, Constantine refers here to specific metals, rather than the planets themselves. While Saturn (a planetary body) is not precisely “lead” (a metal), Saturn’s planetary influence does indeed directly *generate* lead: interpreting the words *ioue et saturno* (Jove and Saturn) to mean, simultaneously, both the planets and their corresponding metals is certainly valid. It is not my intention, however, to suggest that Chaucer read the *Liber secretorum alchimie*. Rather, I want to emphasize that the planetary conjunction of Saturn and Jove in Book 3 is closely tied to the alchemical process of *profundatio* (or “fundamental change”), especially in the context of the alchemical wedding, the chemical combination of the new moon with the masculine sun.

Like an alchemist, Pandarus brings the two lovers “to his hows [or *domus amoris*] som nyght” as part of his agenda to merge the bodies of Troilus and Criseyde in physical union. This chemical union of the male and the female occurs during the alchemical hour of the new moon, “Whan lightles is the world a nyght or tweyne.” We observe how Pandarus is likened to an alchemist in his particular role as one who is able to “transmewen” the shape of “matere”: he literally combines the twin bodies of Troilus and Criseyde within the inner chamber of his house.

To begin, the narrator tells us how Pandarus makes prior arrangements for the clandestine meeting between the two lovers. Specifically, Pandarus unites the “matere” of Troilus and Criseyde:

That Pandarus, that evere dide his myght
 Right for the fyn that I shal speke of here,
 As for to bryngen to his hows som nyght
 His faire nece and Troilus yfere,
 Wheras at leiser al this heighe matere,
 Touchyng here love, were at the fulle upbunde,
 Hadde out of doute a tyme to it founde.

Pandarus prepares “to bryngen to his hows” Troilus and Criseyde “yferē” so that they might consummate their mutual love with real physical contact. Within his private chambers, Pandarus consciously manipulates “this heighe matere” in order to fuse their two bodies in a physical bond. The “matere / Touchyng here love” chemically combines to a point that this matter is “fulle upbounde.” The physical union of two human bodies then imitates the actions of an alchemist with “materes encorporyng” (VIII.815)—the formation of an amalgam or compound—and “cementyng” (VIII.817) (i.e., combination via heat) as stated in the *Canon’s Yeoman’s Tale*. As the “book Senior” instructs,

Projicite foeminam super masculum, et ascendit masculus super foeminam (160)

(Throw the female over the male, and the male will ascend over the female).

Likewise, the *Aurora* author develops this sexual metaphor for alchemical union in terms of female, spiritual mercury and masculine, bodily sulphur: “Woman dissolves man and he fixes her, that is, the Spirit dissolves the body (and softens it) and the body hardens the spirit.”³⁰ For Pandarus, the athanor (furnace) is ablaze and his raw materials are now ready for the final combination. He tells Criseyde to prepare herself as there is “a chaumbre afire” (III.856), which requires swift action (i.e., Criseyde’s willingness to “sodeynly rescowe” [III.857] Troilus after he arrives in Pandarus’s house). After Pandarus succeeds in physically and chemically combining the metallic “bodies” of Troilus and Criseyde, Pandarus “drow hym to the feere / And took a light, and fond his countenance, / As for to looke upon an old romaunce” (III.978–80). Pandarus retreats to the alchemical furnace and observes, passively, the resultant higher form arise from this special combination of matter, which no longer needs its catalyst to move forward. The alchemist simply tends to the fire while the two bodies chemically combine in self-propagation.

The two lovers amalgamate in a physical, organic bond of mutual embrace. The alchemical metaphors seen in Book 3 enhance Chaucer’s poetic celebration of two individuals who “Felten in love the grete worthynesse” (III.1316). Although Pandarus operates on his raw material in order to bring about the alchemical dream, the resulting energy transcends beyond his manipulative control. After all, he merely provides the *catalyst* for the fulfillment of human love that sublimates to that “hevene blisse.” Pandarus then withdraws from the dark laboratory of alchemical love. Even now, the two lovers embrace in mutual love, “And as aboute a tree, with many a twiste, / Bytrent and writh the swote wodebynde, /

Gan ech of hem in armes other wynde” (III.1230–2). In this episode, alchemy serves as a double metaphor. At first glance, the poet’s allusions to the chemical combination of the sun and moon signify the profound love between Troilus and Criseyde conjoined in a mutual embrace. But paradoxically, the thematic and imagistic parallels between alchemy and love also help to ensure their physical separation, and more poignantly, Criseyde’s emotional detachment. As we discussed in chapter 1, Chaucer uses Boethius to describe the transient, *chemical* bonds of human love. The Troilian bond of Book 3 is, therefore, tragically reversible. It will suffice to say here that Pandarus, in his final moments, loses control of his alchemical workings and relinquishes his raw material to Nature, the poem’s *true* alchemist that subsumes it all. But whereas Pandarus’s alchemical manipulations are shown to be under Nature’s control, so too is Nature’s alchemy under God’s authority, who is revealed in the poem’s conclusion to be the Great Alchemist.

Ovid and the Alchemy of Romantic Love

Medieval texts on alchemy venerate Nature as the model alchemist responsible for all physical changes taking place within the mutable realm. In other words, natural forces underlie the generation and corruption of all objects beneath the moon. Along these lines, a natural reading of the *Troilus* is about human process: Chaucer is interested in the relationship between human love and generation, and finally corruption. If human beings, and Troilus and Criseyde, are part of Nature’s alchemy, then this physicalist view might mean that we/they cannot entirely help what we/they are. Of course, this also problematizes the concept of free will. What purpose, then, does the metaphor of alchemical love serve in the poem? Does allegoresis perhaps redeem the “truth status” of romantic love? An allegorical approach to alchemy actually runs parallel to a purely physicalist view of alchemy in the poem, which I withhold discussion of until the latter half of this chapter. For now, I ask what Pandarus’s activities might mean to medieval readers of those alchemical treatises that discuss the ennobling “virtues” required by successful alchemists. Although Pandarus conjures the image of an alchemist who chemically combines two bodies in physical union, as well as one who participates in the mystery of Nature’s alchemy, it is the poem’s rejection of gold and gold-making that allows the poet-narrator to transcend the literal meaning of their physical bond and, instead, supports a moral interpretation of the consummation scene in terms of alchemical allegory.

In the context of the courtly love tradition, the word “gold” takes on a new meaning. Medieval tracts on alchemy, such as the *Epistola solis*,

make repeated claims to distinguish between the gold of true alchemists from the false gold of pretenders: “Sed aurum nostrum, ut intelligas, non est aurum vulgi” (197, 160; But our gold, as you perceive, is not common gold). In the *Troilus*, the first reference to gold occurs when Troilus reasserts the true and noble intentions that lie behind Pandarus’s crafty machinations. Realizing that Pandarus, as his intermediary, does not outright seek “gold”—that is, material or false gold—he instead attributes Pandarus’s intentions to the ideals of *gentil* conduct and the noble virtues:

But he that gooth for gold or for ricchesse
 On swich message, calle hym what the list;
 And this that thow doost, calle it gentilesse,
 Compassioun, and felawship, and trist.
 Departe it so, for wyde-wher is wist
 How that ther is diversite requered
 Bytwixen thynges like, as I have lered.

(III.400–6)

Although it would appear that Pandarus is one “that gooth for gold,” he actually seeks the nobler qualities of “gentilesse, / Compassioun, and felawship, and trist.” Whereas Boccaccio’s Troiolo simply describes Pandarus’s help in the corresponding stanza, Troilus actually *names* Pandarus’s actions according to a list of ideal virtues.³¹ Like the subtle distinction between material and abstract gold, as implied by the *Franklin’s Tale*, Troilus distinguishes “bytwixen thynges like”: material “gold,” which is sought after by greedy opportunists, pitted against the high virtues pertaining to love and friendship.

We might also pause here to consider the *Aurora*’s pseudonymous author who rejects material gold in favor of the 14 principal virtues of the spirit that contribute to an alchemist’s attainment of truth and wisdom. These fourteen qualities (or pillars) consist of the basic attributes of *gentilesse*, which include, for example, charity, goodness, understanding, and patience.³² Similarly, Constantine of Pisa, in the thirteenth century, also lists four cardinal virtues that are essential to the practice of alchemy (quoted again below):

Sed quia consideranda est scientia de quatuor cardinalibus uirtutibus,
 maxime in alchimia, que sunt prudentia que intelligit, iustitia que diligit,
 fortitudo que defendit, temperantia que modum inponit

(But the knowledge of the four cardinal virtues must be considered, especially in alchemy, them being: prudence, which understands; justice,

which loves; fortitude, which defends; and temperance, which imposes moderation.)³³

Analogously, Troilus informs Pandarus that his friend’s alchemical pursuits are not “for gold” but rather for the qualities that pertain to gentility. Chaucer here unobtrusively suggests that Troy’s pagans, to quote Morton W. Bloomfield, “are reasonable pagans who can attain to the truths of natural law—to the concept of a God, a creator, and to the rational moral law but never to the truths of revealed Christian religion.”³⁴ Interestingly, even the Arabic tracts on alchemy espouse the truths of a God, the ultimate source of alchemical gold making. As stated in the *Epistola solis*, “Aurum nostrum non est aurum vulgi. Aurum verò nostrum est, quod est ex opere nostro . . . & attribuerunt illud Deo glorioso, ut inspiraret illud cui vellet, & prohibeatur à quo vellet.” (183; Our gold is not the common gold. Our gold is really that which results from our work . . . and they attribute it to glorious God, that he gives inspiration to whom he wishes, and denies it from whom he wishes.) Pandarus, then, is not a literal alchemist who pursues common gold (*aurum vulgi*), nor is he a representation of Venus’s clerk without the moralization. Instead, Troilus allegorizes Pandarus’s actions in terms of the pagan virtues of friendship, substituting the false gold of greed with the real gold of ennobling virtues. In reverse irony, Troilus has “aurified” Pandarus’s baser actions. By contrast, Calchas is indeed a kind of false alchemist “that gooth for gold,” or at least from Criseyde’s perspective: “Desir of gold shal so his soule blende” (iv.1399).

The rejection of common gold resumes at a critical point in the narrative, the consummation scene in Book 3. After the two lovers exchange love tokens, the narrator provides his audience with an excursus on the futility of material greed. More important, the narrator uses the language of *alchemy* as a proper means to admonish the parsimonious for their base pursuit of actual gold. After Criseyde presents Troilus with the gift of a ruby, which is shaped like a heart, the narrator uses the opportunity to make an important distinction between possessions of *false* gold (false felicity) and the knowledge of love’s “trouthe”:

Soone after this they spake of sondry thynges,
 As fel to purpos of this aventure,
 And pleyng entrechaungen hire rynges,
 Of whiche I kan nought tellen no scripture;
 But wel I woot, a broche, gold and asure,
 In which a ruby set was lik an herte,
 Criseyde hym yaf, and stak it on his sherte.
 Lord, trowe ye a covetous or a wrecche,
 That blameth love and halt of it despit,

That of tho pens that he kan mokre and kecche
 Was evere yit yeven hym swich delit
 As is in love, in o poynt, in som plit?
 Nay, douteles, for also God me save,
 So perfit joie may no nygard have.

They wol seyn “Yis,” but Lord, so they lye,
 Tho besy wrecches, ful of wo and drede!
 Thei callen love a woodnesse or folie,
 But it shall falle hem as I shal yow rede:
 They shal forgon the white and ek the rede,
 And lyve in wo, ther God yeve hem meschaunce,
 And every lovere in his trouthe avaunce!

As wolde God tho wrecches that dispise
 Servise of love hadde erys also longe
 As hadde Mida, ful of coveytise,
 And therto dronken hadde as hoot and stronge
 As Crassus did for his affectis wronge,
 To techen hem that they ben in the vice,
 And loveres nought, although they holde hem nyce.

(III.1366–93)

The narrator’s climactic resolution that the miserable wretches who spurn love will inevitably forgo “the white and ek the rede” is a signpost for Chaucer’s readers to interpret the passage in terms of alchemical allegory. By contrast, the corresponding line in the *Filostrato* only states that misers will lose their money (“denar perderanno,” 3/39). Virtually all such references to the red and the white are unique to alchemical texts of the Middle Ages. By way of example, Gower explains what is meant by “the red” and “the white” in his *Confessio amantis*:

Forth with this Ston, as it is seid,
 Which to the Sonne and Mone is leid:
For to the rede, and to the whyte,
 This Ston hath pouer to profite.
 It makth multiplicacioun
 Of gold and the fixacioun.³⁵

In the *Troilus* passage, the “besy wrecches” that call love “a woodnesse or folie” do not properly comprehend the alchemy pertaining to “the white [silver] and ek the rede [gold].” Instead, these wretches are condemned to live in woe for their false pursuit of material wealth.

The narrator then curses “tho wrecches that dispise / Servise of love” in hopes that they experience the same fate as Midas or Crassus, figures not included in the *Filostrato*. Midas exemplifies the literal meaning of alchemy in that he transmutes everything he touches into actual gold (see Ovid, *Metamorphoses*, 11.100–93). In a similar perversion of alchemy’s true purpose, Crassus, triumvir with Caesar, drinks actual gold, as opposed to the potable gold of the philosophers’ elixir, and dies as a result. The “moral Gower” (v.1856)—whom Chaucer dedicates his *Troilus* to—tells the story of Midas in Book 5 of the *Confessio* (devoted to the sin of Avarice). The emphasis here is on the transformation of material things into gold. Significantly, this element of the Midas story provokes Gower’s readers to rethink his section on alchemy, which is discussed at length in the previous book. It is the science of alchemy in Book 4 that “makth multiplicacioun / Of gold” (iv.2573–4), and “Wherof the Selver multeplic / Thei [alchemists] made and ek the gold also” (iv.2460–1). In Gower’s Book 5, however, the story of Midas is used as an exemplum for the moral consequences that lie behind this engrossing experience of “multiplicacioun.” The reader is warned, “And thus, thogh that he multeplic / His gold, withoute tresorie / He is, for man is nocht amended / With gold” (v.133–36). In the Midas story, the Phrygian prays to Bacchus and requests “That wherupon his hond he leide, / It sholde thurgh his touche anon / Become gold” (v.268–70). Like the alchemists in Gower’s Book 4, Midas literally transmutes the stuff of Nature into physical gold:

He toucheth that, he toucheth this,
 And in his hond al gold it is,
 The Ston, the Tree, the Lef, the gras,
 The flour, the fruit, al gold it was.

(5.275–8)

While the Ovidian story of Midas is used as a caution against the sin of Avarice, Amans clarifies to Genius that he would forgo material gold in order to attain his courtly Lady:

For certes, if sche were myn,
 I hadde hir levere than a Myn
 Of Gold; for al this worldesriche
 Ne mihte make me so riche
 As sche, that is so inly good.

(5.85–9)

I would add to this the attack against avarice by Chaucer's poet-narrator, who appropriates the myths of Midas and Crassus in order to condemn greed (false gold)—“They shal forgon the white and ek the rede”—and praise the merits of human love (true gold). Like Gower's Amans (who rejects a mine of gold for “sche, that is so inly good”), Chaucer's narrator unveils a higher truth (the “Servise of love”) in the Ovidian context of true and false alchemy. As stated in chapter 3, the fictional Morienus Romanus, in the *De compositione alchemiae*, instructs the Arab prince Khālid that alchemical transmutation is impossible unless it be accomplished “per dilectionem et humilitatem molliciem et amorem perfectum atque verum” (through affection and gentle humility, a perfect and true love).³⁶ In other words, *amor*, in one manifestation or another, is central to alchemical practice.

The fact that Chaucer uses the virtues and vices of alchemy to allegorize Ovidian myth and the classical past is not surprising. The historian Jonathan Hughes articulates how one fourteenth-century alchemist allegorized Ovid's *Metamorphoses*:

The secret they [the alchemists] all held and communicated in veiled allegories was that Christ himself, the Redeemer, continued to manifest himself in the material world in the form of the golden spirit of mercury, trapped in matter. This secret was, according to Bonus, transmitted to an elect group of initiates in veiled allegories such as the myths of Jason and the Golden Fleece and the Minotaur in the Cretan labyrinth, many of which expressed the torture of metals and the Passion of mercury.³⁷

Petrus Bonus was not the only writer to use Ovid for Christian moralization. The German Benedictine Conrad of Hirsau (ca. 1070–1150) and author of *Dialogus super auctores* makes clear that medieval readers of Ovid's love poems are able to learn the Christian teachings of right love from the *doctor amoris*, for Ovid had knowledge of the Christian God, despite not having been a Christian himself.³⁸ More important, Conrad believes that careful readers of Ovid are capable of discovering the gold of God's wisdom in an otherwise pagan text, even though the task is ultimately disadvantageous: “Why ought the docile novice of Christ submit his wit to Ovid's books, for although gold can be found in the dung, the stench from the foul matter alongside the gold pollutes the seeker, however avid he might be for the gold.”³⁹ To summarize, Calabrese notes how “Ovid's rhetorical alchemy mixes or interchanges gold and dung, and if Ovid is to provide any useful doctrine, the good reader or the young monk must read to find the gold in the dung.”⁴⁰ One other point, from Calabrese, is the fact that in *Troilus*, “Chaucer was aware of the ‘two Ovids’; he knew

that Ovid could be read for gold, but he dramatizes reading him literally, being caught in the *stercora*, the unholy matter both hidden and beautified by Ovid’s art.⁴¹ During his opprobrium, the narrator convinces himself, at least momentarily, that he has found the gold of wisdom in Ovid’s text, whatever it may be.

Criseyde’s gift of the ruby, “set was lik an herte,” might also suggest the perfect ruby, known as the red stone of the philosopher. In the thirteenth and fourteenth centuries, the use of *ad rubeum* and *rubificatio* occurs frequently in alchemical recipes. In fact, rubies appear throughout Chaucer’s “book Senior.” In the *Canon’s Yeoman’s Tale*, Chaucer makes reference to the “watres rubifyng” (VIII.797, my italics), which are glossed in the *Riverside* as “liquids capable of reddening substances, of turning them to gold.”⁴² In fact, I argue that Chaucer’s “waters rubifyng” are taken directly from the *Epistola solis*: “aquam rubeam, quae tamen non sunt rubeae, sed nominaverunt sic ab operatione sua.” (168; ruby water, which are nevertheless not rubies, but they called them such because of what they do). Interestingly, we also encounter “ruby water” (*aquam rubeam*) when Troilus writes his letter to Criseyde. The “ruby” (or signet) is submerged in water, a “bathe” of distilled (alchemical) tears: “And with his salte teris gan he bathe / The ruby in his signet, and it sette” (II.1086–7). Crucially, the “book Senior” and the *Aurora consurgens* also gloss the “ruby” to mean “Animam tingentem propter quod acquisivit virtutem ex igne” (172; the tincturing soul, because it has received virtue from the fire).⁴³ In the *Troilus*, the ruby, “set was lik an herte,” is not material gold (i.e., “the rede”) but rather signifies the lover’s red heart or “soul,” which burns from alchemy’s steady fires of love. In turn, God wills “every lovere in his trouthe avaunce.” Love concerns itself with the red ruby, “trouthe,” as opposed to the material accumulation of false gold. While Criseyde’s gift of gems and precious metals ironically ignites a diatribe against material greed, the narrator implies that Troilus values her gift as a symbol or token of the abstract gold of human love, as opposed to the material gold of monetary gain. This comparison also reflects the conventional truism of the *Canon’s Yeoman’s Tale*: “But al thyng which that shineth as the gold / Nis nat gold” (VIII.962–3).

Whatever truth there is to the list of noble virtues found in the treatises, Nature’s alchemy appears ultimately responsible for human process. The mutuality of the lovers’ shared joy in Book 3 creates basic questions for the reader about the relationship of chemical combination to the shared experience of human bodies. To what extent can a human body—an elemental *mixtum*—inhere in another? Does a new substantial form emerge from the chemical union of human beings? Can we reconcile a physicalist view of the universe with human love? Chaucer perhaps

fantasizes about a loss of self during a profound moment of chemical union and shared identity between lovers. However, Nature's alchemy also creates obstacles for the expression of free will. Like Pandarus, alchemists are only *secondary* movers who participate in the mystery of Nature's process. This is perhaps related to Chaucer's questioning of self-motion in the *House of Fame* (see chapter 2). Chaucer's characters are undoubtedly moved by Nature's alchemy but do not appear to actually move themselves. Once again, the ubiquity of the Prime Mover in Chaucer's universe will pose questions about movement, freedom, and identity. In the remaining pages of this chapter, I will unfold a "physicalist" reading of alchemy that brings to focus the primacy of natural laws within the elemental world of *Troilus and Criseyde*.

Distillations of the Human Body as Alembic

The most lucid reference to alchemy in the poem occurs in Book 4 when "This Troilus in teris gan distille, / As licour out of a lambyc ful faste" (iv.519–20). These lines are independent of the *Filostrato*, and it is therefore worth quoting the episode in full:

"O deth, syn with this sorwe I am a-fyre,
Thou other do me anoon yn teris drenche,
Or with thi colde strok myn hete quenche.

Syn that thou sleest so fele in sondry wyse
Ayens hire wil, unpreyed, day and nyght,
Do me at my requeste this service:
Delyvere now the world—so dostow right—
Of me, that am the wofulleste wyght
That evere was; for tyme is that I sterve,
Syn in this world of right nought may I serve."

This Troilus in teris gan distille,
As licour out of a lambyc ful faste;
And Pandarus gan holde his tunge stille,
And to the ground his eyen down he caste.
But natheles, thus thought he at the laste:
"What! Parde, rather than my felawe deye,
Yet shal I somewhat more unto hym seye."

(iv.509–25)

The narrator compares Troilus's tears to the purified liquids from a distillation. Lines 519–20 constitute a double metaphor: Troilus's physical body

literally and figuratively functions as a human "lambyc." Troilus distills away the physical substance of his body via tears. As a biological machine capable of chemical extraction, Troilus's body constantly separates the volatile substance from his grosser matter. The ongoing process of bodily distillation, we shall find, occurs throughout the narrative, even to a point that the narrator wonders in earnest if Troilus is even capable of surviving the extraction of such large quantities of matter from his body: "But tho bygonne his teeris more out breste, / That wonder is the body may suffise / To half this wo which that I yow devyse" (iv.257-9). After Troilus "gan distille," Pandarus follows suit with his tongue. Whatever truth there is to Pandarus holding his tongue "stille" yields immediately to comic irony in the next line. Pandarus thinks, "I somewhat more unto hym seye." The fact that Chaucer's audience is supposed to imagine another sort of distillation is also evident by the word "stille," a variant of "distille" as in "stillatorie" (CYT, viii.580). In other words, the Pandaric version of the alembic lies in the utilization of his tongue, which distills substance away in air or breath, as opposed to the tears from his "eyen." Whereas Troilus's tearful distillations place emphasis on his bathetic passivity, Pandarus actively distills "purified" words of reason and clarity (at least at this very point in the narrative). Troilus, however, permits his own bodily matter to waste away with drops of distilled tears, a symbol for his pathetic inaction.

Given that the medieval science of alchemy is less familiar to modern readers of Chaucer's poetry, it is worthwhile explaining what is meant by the poet's use of alchemical terms, such as "licour," "distille," and "lambyc." The word alembic derives from the Arabic *al-anbīq* (from the Greek, *ámbix*, "cup"). In the later Middle Ages, an alembic came to mean a distillation apparatus that included both the cucurbit or still (i.e., a flask containing the matter to be distilled) and the still-head (an attachment that cooled the vapor and condensed the volatile into a liquid). Of course, the use of an alembic for distillation purposes was synonymous with the art of alchemy itself. First, the alchemist applies heat to the cucurbit using "diverse fires maad of wode and cole" (CYT, viii.809). At the bottom of the cucurbit, the volatile substance then separates from the raw material, rising within the alembic as a vapor or gas. The "impurities" and grosser matter remain fixed below, unvaporized by the heat. When the vapor of the extracted matter reaches the still-head (also called "head" or "capital"), it is cooled and the vapor condenses into liquid, the distillate, which runs by means of a tube into a receiver that captures the newly extracted substance, which remains volatile. The German Dominican Albertus Magnus (d. 1280) provides a description of alchemical distillation like the one referred to in the *Troilus*. In the *Libellus de alchimia*, he succinctly

defines the art of distillation as “the rising of the vapors of a liquid in its own container,” adding that

The general purpose of distillation is [the] purification of a liquid from its dregs. We can see that the distillate is rendered purer [than the original

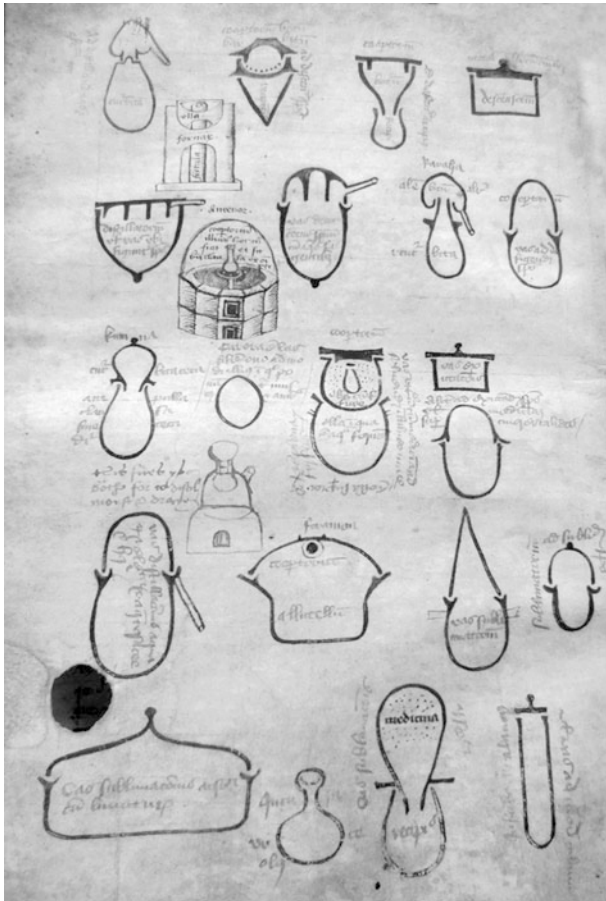


Figure 4.3 Trinity College, Cambridge, MS O.2.18 (James’ catalogue, 1122), fol. 120v. Alchemical furnaces, alembics, and vessels of sophisticated design (late fourteenth century, England). Archaeological finds suggest that these drawings are actually based on real apparatuses. See also Peter Kurzman, *A Manuscript with Illustrations and Equipment of Alchemy in the Fourteenth Century*, *Sudhoffs Archiv* 89 (2005): 151–69. By permission of the Master and Fellows, Trinity College, Cambridge.

liquid]. The special purpose of pure water is the imbibation of spirits and clean medicines, so that we can have a pure solution when we need one, for the dregs that can contaminate our medicines and purified spirits will have been removed. Distillation was invented to extract, through a descensory, an oil pure in its nature, whenever we cannot [evidently] have an oil combustibile in its nature, as is true of petroleum.⁴⁴

Each successive distillation of matter supposedly achieved a more refined, purer distillate. By applying varying degrees of heat literally dozens (or even hundreds) of times to the extracted materials, alchemists sought the “quintessence” of matter—that is, the fifth essence that connected our sublunary world to the immutable realm of the heavens. The distillate mentioned in the *Troilus* passage is precisely this “licour”: a liquid or strong, fiery alcohol that many alchemists believed to contain this hidden, celestial “quintessence.”

Historically, the distillation of alcohol—first achieved by a physician of Salerno called Salernus (d. 1167)—had an important impact on medieval science. The first known written record of alcohol itself had, in fact, occurred in the tenth century in an Italian manuscript known as the *Mappae clavicula* (Little Key to Painting), which describes how distilled wine (a dilute solution of alcohol) burns steadily without setting anything else on fire.⁴⁵ As stronger, larger glass columns (as opposed to clay columns) became more readily available, thus increasing surface area of the cooling surface, alchemists achieved a much higher concentration of alcohol. Taddeo (Thaddeus) Alderotti (AD 1215–1302) of Florence, the famous physician mentioned by Dante in *Paradiso* 12.82–4, contributed significantly to alchemy and medicine with the introduction of fractional distillation. He distilled wine with an efficient cooling method for condensing the vapor inside the alembic. While working at the University of Bologna, he used this method to produce a distillate with an alcohol concentration of approximately ninety percent. He wrote on the medicinal properties of this alcohol in his *De virtutibus aquae vitae*.⁴⁶ The Franciscans, especially those who dealt directly with sacramental wines and who perfected distillation techniques, were quick to recognize the medicinal benefits of using such high concentrations of alcohol in treating sick patients.⁴⁷ The Franciscan alchemist John of Rupescissa, for example, describes how he used alcohol to extract from plants active compounds that had considerable healing properties. In fact, archaeological sites of various priories in England have produced chemical vessels from this period, doubtless remnants of their involvement in making alcoholic tinctures.⁴⁸ In this context, it is not surprising that the list of alchemical ingredients in the *Canon's Yeoman's Tale* includes, for example,

“arguille” (crude potassium tartrate from fermenting wine), “berme” (brewer’s yeast), “sal tartre” (potassium carbonate produced by calcining the tartar deposited in casks during the fermentation process), and “wort” (unfermented beer) (VIII.810–15).

Chaucer’s poetic comparisons of the human body to an alembic belong to a long-standing medieval trope that relates human corporality to the science of alchemy. Alchemists use such words as “arm” or “head” to denote the parts of an alembic. For example, Alderotti instructs us that the spout of an alembic “should be of the length of an arm.”⁴⁹ But beyond this, alchemists consciously employ the conceptual theories of human physiology to understand the physical phenomena taking place within the alembic, which a few passages will suffice to demonstrate. Henri de Mondeville, surgeon to Philip the Fair of France (AD 1268–1314), wrote in his *Book of Surgery* (ca. 1306) that the human body is like an alchemist’s furnace, “in which boiling, combustion and calcination were constantly taking place, and the surgeon’s or physician’s task was to preside over this process in such a way as to restore healthy balance to the temperature of the humours.”⁵⁰ Similarly, the fourteenth-century physician Petrus Bonus of Ferrara, who wrote the *Margarita preciosa novella* (New Pearl of Great Price), compares the inherent, digestive power of metals to the activity of the human stomach.⁵¹ The alchemical furnace, Bonus adds, aids in the digestion of metals “as food is better digested if the inward animal heat be aided by warm baths.”⁵² According to some writers on alchemy, Nature is indifferent to the actual site of chemical change. Nature uses the same materials and applies the same methods, whether operating within the human stomach or deep inside the earth’s core. As stated in the *Book of Minerals*, “just as in the bodies of animals food is mixed with digestive juice, and its froth boiling up on the surface is changed into yellow bile—so it seems that Sulphur is like the froth of what is mixed together in the bowels of the earth.”⁵³ As a matter of fact, these varying sites of physical transformation are interchangeable: metal moves about “as if it had been swallowed by the Earth and were moving about in its bowels.”⁵⁴

Nature’s laws do not vary according to temporal or spatial variables. The *Book of Hermes*, which appears in several manuscripts from the late thirteenth or early fourteenth century, argues that the four elements, whether produced by man or caused by Nature, are inherently the same in substance, regardless of the mode of production:

But human works are variously the same as natural ones, as we will show in fire, air, water, earth, minerals, trees, and animals. For the fire of natural lightening and the fire thrown forth by a stone is the same fire. The natural ambient air and the artificial air produced by boiling are both

air... the natural wild tree and the artificially grafted one are both trees. Natural bees and artificial bees generated from a decomposing bull are both bees. Nor does art make all these things; rather it helps nature to make them. Therefore the assistance of this art [alchemy] does not alter the nature of things. Hence the works of man can be both natural with regard to essence (*secundum essentiam*) and artificial with regard to mode of production (*secundum artificium*).⁵⁵

The four elements consistently maintain their properties and transmute in predictable ways, despite the diversity of possible environments. Likewise, John Doubelay, in his *Stella alchemiae*, “showed how the human body heated by the liver, fuelled by bellows of the lungs, acted as a womblike furnace in the same manner as the earth from which sulphur generated the burgeoning procreative powers of the Spring.”⁵⁶ The fire heating the human liver, and the fire combusting metals deep within the earth’s core are the same elemental fires heating an alchemist’s athanor. In the *Liber secretorum alchimie*, it is stated that the natural and vital spirits of human beings issue from the liver and heart, uniting our bodies with the soul in the same way that quicksilver congeals insensate metals into new bodies comprised of matter and spirit.⁵⁷ Nature does not alter her principles but, instead, guarantees a logical production of change. This constant, altering movement of matter and form—the transmutation of elements as dictated by natural laws—divides the sublunar region from the celestial realm.

This monistic philosophy, prevalent throughout fourteenth-century alchemical texts, spurs Chaucer’s interest in the “bodies” and “spirites” of the science (VIII.820). In the *Canon’s Yeoman’s Tale*, the “body” refers to the seven metals as well as the seven planets. However, Chaucer’s poetic treatment of the Canon’s actual “body” refers to another meaning of the alchemical *corpus*. Here, Chaucer hardly differentiates between human and metallic bodies. Like the alembic metaphor in the *Troilus*, the Canon’s sweating forehead is compared to a “stillatorie” that distills organic matter:

But it was joye for to seen hym swete!
His forheed dropped as a stillatorie
Were ful of plantayne and of paritorie.

(VIII.579–81)

The comparison of the Canon’s forehead to an alembic is one of many instances in which the Canon “is revealed as part of the mechanism of an ‘alchemy’ ... forces beyond his control and his comprehension distill his substance away.”⁵⁸ In other words, Chaucer frames his mechanical body as

a natural distillatory vessel. Heat and moisture interact within the human body as they would inside an alembic. As Grennen aptly points out, the Yeoman's visage undergoes a reverse transmutation from a "reed" to a "leden hewe." This is further substantiated when the Yeoman recognizes that his cheeks "glowe" (VIII.1096) red with shame, but he then qualifies his statement in the following line: "fumes diverse / Of metals, whiche ye han herd me reherce, / Consumed and wasted han my reednesse" (VIII.1098–100). This irony, Grennen adds, is "meant to suggest a laboratory procedure involving a glowing vessel."⁵⁹ But more crucially, the deliberate ambiguity of language prevents us from making a clear distinction between Chaucer's characters and alchemy's metals.

A number of alchemists compare human beings to the philosophers' stone itself, an idea that appears in the influential *De anima in arte alchemiae* (On the Soul in the Art of Alchemy) of pseudo-Avicenna in the mid-thirteenth century. Interestingly, Vincent of Beauvais, Albertus Magnus, and Roger Bacon all quote extensively from the *De anima*. In fact, it was the main source of Bacon's alchemical writings. According to this text, the stone is not only biological, but also uniquely *human-like*:

Accipe de petra quae non est petra et non de naturis petrae, divide per quatuor partes—per aerem et ignem et terram et aquam. Et nos non possumus invenire quod aliter fieri possit nisi in hunc modum, et de sanguine vivit homo et moritur et stat, ita de lapide, ideo dicunt quod iste lapis est lapis animalis; et ideo quia non est anima altior homine ideo accipiunt lapidem hominis, et ideo quia in corporibus non est corpus altius auro ideo facimus de sanguine aurum.

(Take from a stone that which is not a stone and has none of the distinctive features of a stone. Divide it into four parts—air, fire, earth, and water. I am unable to discover that it can be done in any way other than the following. A human being lives, dies, and depends upon blood, likewise the stone. Consequently they say that this stone is a living stone, and therefore because there is no higher soul than a human being, they take the human stone, and because among bodies there is no body higher than gold, we therefore make gold from blood.)⁶⁰

The "human stone"—organic and biological—originates from human blood. This makes perfect sense, given that the body relies on blood for its sustenance and self-generation. Human blood contains the fundamental, first matter for obtaining the perfect stone. As Sébastien Moureau comments in his study of the thirteenth-century *De anima*:

Ps. Avicenna openly gives preference to blood: blood is considered the soul of man by the author, because it is by way of his blood that man lives.

As the soul of man is the higher soul, it is used to insert a soul into gold, which is the higher metal. Indeed, the elixir is said to bring a soul to the body, i.e., the metal. So the body, united to the spirit, receives a soul.⁶¹

Historically, alchemists did, in fact, distill matter from the human body itself. For example, pseudo-Arnold of Villanova (ca. 1235–1311), the Catalan alchemist quoted by Chaucer in the *Canon's Yeoman's Tale*, describes the distillation of human blood from an alembic.⁶² Similarly, Roger Bacon (ca. 1214–94), the English Franciscan who studied at Oxford and at Paris, likened the basis of the stone to a purified form of human blood, which he repeatedly distilled as a means of extracting the *prima materia*:

Sed aurum per magisterium, ut dicit Avicenna, libro de Anima, est melius naturali. Et similiter est magna differentia inter modos auri de magisterio, et optimum est quod fit per illud quod est equalis complexionis. Et prolongat vitam

(But the gold of the magistry, as Avicenna says in the *Liber de anima* [i.e., the *De anima*], is better than the natural [gold]. Similarly, there is a great difference between the types of gold of the magistry, and the best is the [gold] that is made with that which is of equal complexion [i.e., equal blood]. And it prolongs life).⁶³

The French alchemist John of Rupescissa (d. 1366), who wrote *De consideratione quintæ essentiæ*, considered human blood as a basis for heavenly quintessence:

Since human blood is the perfect work of nature in us so much that it augments what has been lost, it is certain that nature perfects and has perfected this quintessence so that without any preparation it transforms blood from the veins immediately into flesh. And this extraordinary quintessence is the greatest thing of nature to be had, because in it is the marvelous virtue of our starry heaven, and it performs divine miracles to the cure of nature.⁶⁴

Needless to say, Galenic medicine supports the view that blood actively transmutes the body with growth and replacement. The chemical action of human blood in fetal development is therefore compared with, if not equivalent to, the process of alchemy itself, as stated in the *De compositione alchemiæ*:

Et sicut est hoc opus maius ipsum per se consistens, et non indiget alio, quia apud philosophos rectum et absconditum est. . . Et haec nomina sunt

multa que sapientes in suis libris nominaverunt, quorum unum est sperma, quod cum vertitur in sanguine mutatur, et postea fit quasi frustum carnis commixtum. Et sic una creatura alteram succedit et forma recedit, donec homo fiat.

(Thus also does the Major Work consist in itself, requiring nothing else, the proper secret of the philosophers . . . The wise used many terms in the books, one being “sperm,” because when turned about in blood, sperm is changed and is afterwards made as like a mixed piece of flesh. Thus, the process of generation proceeds by a succession of forms, until man is made).⁶⁵

In the *Epistola solis* (the book Senior), Plato refers to the gestation of a human embryo from fertilization to birth in the context of his instructions for preparing the philosophers’ stone:

Semen enim viri projectum in matricem mulieris, adhaeret septem diebus, & fit humor subtilis, & manet septem diebus, donec coaguletur in omnibus membris, in ventre mulieris, per tenuitatem ejus, & subtilitatem, & pervenit ad carnem, & fit caro, & super ossa, & fit os, & super pilos, nervos, & simile fit in eis . . . Et haec tota est assignatio praeparationis lapidis eorum, & secundum hoc praeparaverunt. (181–2)

(Semen of the man projected into the womb of the woman sticks there for seven days, and becomes a subtle humor, and it remains seven days, until it is coagulated into all the limbs in the belly of the woman, and through its slenderness and insubstantiality, it turns to flesh, and flesh is made and then bones, and mouth is made, and then hairs, nerves, and other similar things . . . and this is the complete signification for the preparation of their stone, and they prepared it according to this.)

Human blood was only one of many possible sources of the stone, however. In addition to blood, medieval alchemists also distilled human hair,

for this contains more of the mineral power, especially if it has been cut from the head. Why this is so is irrelevant here but is to be explained in the science of *Animals*. Evidence of this is that in my own time a human skull was found and seen to have many bits of gold dust embedded between the teeth of the sutures in the top of the cranium.⁶⁶

According to Albertus, the sutures of the skull produce both hair and gold. For Chaucer, the site of human distillation or condensation remains somewhere on the still “head”—that is, on Troilus’s eyes or the Canon’s forehead. At any rate, the generative powers of the human body provided

alchemists and poets alike with suitable material for representing alchemy’s distillations and transmutations.

Distillations of the Courtly Lover

Before we consider alchemy elsewhere in the *Troilus*, we need to examine Chaucer’s most proximate source for the alembic metaphor in Book 4. The *Riverside Chaucer* mentions a single line in Jean de Meun’s version of the *Roman de la Rose* as a likely precedent for the image of a lover weeping tears as liquor out of an alembic: “Je vei maintes feiz que tu pleures / *Come alambic seur alutel* [a subliming pot]” (Many times I see you crying as an alembic does into an aludel). However, the alchemical metaphor is not limited to the distillation of tears and extends well beyond the single line referenced in the *Riverside*:

Je vei maintes feiz que tu pleures
Come alambic seur alutel:
 L'en te devrait en un putel
 Tooillier come un viez panufle.
 Certes je tendraie a grant truffle,
 Qui dirait que tu fusses on,
 Qu'onques on en nule saison,
 Pour qu'il usat d'entendement,
 Ne mena deul ne marement.
Li vif deable, li maufé
T'ont ton athanor eschaufé,
Qui si fait tes eauz lerreier,
 Qui de nule rien esmaier
 Qui t'avenist ne te deüsses,
 Se point d'entendement eüsses.
 Ce fait li deus qui ci t'a mis,
 Tes bons maistres, tes bons amis,
C'est Amours, qui soufle e atise
La brese qu'il t'a ou cueur mise,
Qui fait aus eauz les lermes rendre.
 Chier te veaut s'acointance vendre,
 Car ce n'aferist pas a ome
 Que sens e proece renome.

(3.3.6382–404)

(Many times I see you crying as an alembic does into an aludel. You should be stirred into a mud-puddle like an old rag. Certainly, I would consider anyone a big joke who said that you were a man, for no man at any time,

provided that he used his understanding, ever encouraged sorrow or sadness. *The living devils, the evil ones, have heated your furnace* ["athanor"], *which makes your eyes thus flow with tears*; but if you had used your understanding, you should never have been downcast by anything that happened to you. This is the work of the god who put you here, your good master, your good friend; *it is Love who fans and inflames the coals that he has put in your heart, who makes the tears come back to your eyes*. He wants to sell his company at a high price, for it might not be suitable for a man to make his intelligence and prowess widely known.)

In Jean de Meun's version, admittedly comic, the personification of Reason, equivalent to Pandarus, advises the lover to depart from sadness, which, Reason argues, is a feminine quality. Reason then compares the sad lover to an alembic and an aludel (from Arabic: *al-uthāl*, "the vessel" or subliming pot). Living devils continually add coals to the lover's "athanor" (from Arabic: *at tannūr*) in line 6394, an alchemical furnace designed specifically for maintaining a constant, uniform temperature throughout the digestion process of metals. This digester furnace heats the alembic and causes the lover's eyes to distill tears of "pure" sorrow. Jean de Meun, who developed a reputation in the Middle Ages as a master-chemist, then links images from alchemy to the French courtly love tradition. Reason compares this false alchemist to the god of Love, the one who employs these living devils (his attendants), and the one who continually fans the coals to heat the athanor beneath the alembic, now construed as the lover's heart. In other words, the imagery of the human body as an alembic maintains that the heart functions as an alchemical "athanor." Within the human alembic, the volatile substance of the heart rises as vapor (or sighs) and condenses/distills as drops of clear liquid (or liquor) from the top of the alembic or still-head (i.e., the lover's actual head).

The concept that tears originate from the heart appears unambiguously in the *Troilus*: "But tho bigan his [Troilus's] herte a lite unswelle / Thorough teris, which that gonnen up to welle" (v.214–15). The notion of the heart as the source of tears also appears elsewhere in the poem: "ebben gan the welle / Of hire teeris, and the herte unswelle" (iv.1145–6). The athanor heats the bottom of the alembic (the lover's heart), and the alchemist extracts the purer substance of organic matter, separating the subtler matter from grosser material. By analogy, the fires of sorrow heat the lover's heart and evaporate his more volatile substance, which subsequently distills as teardrops. In the *Troilus*, Chaucer adapts a nuanced reading of the *Roman* in the context of his "lambyc" metaphor. Only a few lines before the narrator mentions how tears "distille," Troilus complains that "with this sorwe I am a-fyre." Like the lover's heart heated

by Jean’s “athanor,” Troilus’s own heart is also subject to the intense fires that heat the body-alembic. Volatile spirits evaporate in the form of sighs, which sometimes cool and then condense as tears. These tears then “gan distille, / As licour out of a lambyc.” As will become clear, Troilus’s request in this same passage that death “sleest” him is also significant to this alchemical reading.

A Metallic Troilus

Troilus’s alchemical “body” repeatedly experiences *internal* combustion, calcination, sublimation, and distillation. By way of example, Troilus’s heart melts tears of blood: “The bloody teris from his [Troilus’s] herte melte, / As he that nevere yet swich hevynesse / Assayed hadde, out of so gret gladnesse” (III.1445–7). Like the extraction of human blood from an alembic, “bloody teris” are distilled from the contents of Troilus’s heart/athanor. By contrast, Boccaccio here simply states that Troiolo almost weeps: “Troiolo l’abbraccio quasi piangendo” (44/1). The narrator suggests that Troilus undergoes a kind of alchemical “trial by fire” when his suffering is “assayed” like a precious metal, causing his baser qualities to “melte.” By way of comparison, the Canon and the priest of the *Canon’s Yeoman’s Tale* will also “make assay” (VIII.1249) and “Unto the goldsmyth with thise teynes three / They wente and putte thise teynes in assay / To fir and hamer” (VIII.1337–9). Pandarus, of course, acts as a smith who hammers and distills iron throughout the courtship process: “Pandare, which that stood hire faste by, / Felte iren hoot, and he bygan to smyte” (II.1275–6). Pandarus subjects the courtly lover (or “metal”) to the intense fires of the heart/“athanor.”

The critical interpretation that Troilus represents an imperfect metal occurs elsewhere in the poem. In fact, Troilus is more than once identified with the metal “steel,” a word used specifically to denote iron that has been carefully distilled by fire. Significantly, Criseyde “felte he [Troilus] was to hire a wal / Of stiel” (III.479–80). Criseyde’s identification of Troilus with steel originates from his triumphal entry into Troy, when the narrator compares him to the god of Mars “that helmed is of steel” (II.593). In the next stanza, this metal assumes the exterior accidents of Troilus’s body by way of his armor: “His helm tohewen was in twenty places...His sheeld todasshed was with swerdes and maces” (II.638–40), and Pandarus artfully describes Troilus triumphant in battle “Whil that he held his bloody swerd in honde” (II.203). The imagery also persists in Book 3 when Troilus “was in Martes heigh servyse—/ This is to seyn, in armes as a knyght” (III.437–8). Thematically, the repetition of this simile throughout the *Troilus* is revealing. Nevertheless, I want to

point to another instance of this simile in Book 5. The narrator declares that Troilus is “Trewe as *stiel* in ech condicioun” (v.831, my italics). What is interesting about this comparison is the fact that steel is, quite literally, what remains of “iron” after the distillation of its watery parts, which is indeed consistent with the distillation metaphor of Book 4. To put it another way, steel is the end product of iron after it is distilled, a refining process that both dries and hardens the metal. The Latin for “steel,” therefore, is also *ferrum* (iron).

The relatedness between the metals is also demonstrated by a popular medieval account of steel and its attributes:

Chalybs autem non est alia species metalli quam ferrum, sed est subtilior et aquosior pars ferri ex ferro per distillationem extracta: et ideo durior est et compactior, propter vim ignis et propter partium subtilitatem, quæ duriores efficiuntur quando uruntur. . . et cum nimis induratur, tunc scinditur et percussum comminuitur propter nimiam sui desiccationem. Est autem diversitas aquæ in desiccando plus et minus: et ideo fabri quæerunt specialiter aquam in qua extinguant ferrum, ex quibus faciunt gladios. Cum enim candet et in aquam mittitur, induratur, eo quod calidum frigiditatem aquæ fungiens ad interiora ferri, comburit in ipso materiale humidum, et hujusmodi consumptione magis et magis induratur.

(Steel is not a different specific form of metal from iron: but it is more fine-grained, and the more watery part of the iron has been extracted from the iron by distillation; and therefore it is harder and more compact, because of the force of the fire and the fine division of its parts, which become harder when heated. . . but when it gets too hard, it breaks and shatters at a blow, because it is too much dried out. However, different kinds of water produce different degrees of hardening. For this reason, smiths search out special waters for quenching the iron from which they make swords. For when iron is made white hot and plunged into water it is hardened because the heat flees from the cold of water into the interior of the iron and burns up the moist material in it; and as [moisture] is consumed, the steel becomes harder and harder.)⁶⁷

A smith quenches iron “by distillation” in his workshop, producing hardened steel. Like the metal iron, the “watery part” of Troilus is extracted by distillation (i.e., in the form of liquid tears). In the *Epistola solis* poem, the amorous sun (analogous to Troilus in Book 3) declares to the moon, “Ego ferrum durum siccum, ego fortis pistans” (149; I am iron, hard and dry [steel], trusting in my strength). In this context, Troilus is also identified with metallic steel (i.e., distilled iron made “hard and dry”).

More importantly, Troilus envisions precisely a “love of stiel” in his address to lovers in general:

O ye loveris, that heigh upon the whiel
 Ben set of Fortune, in good aventure,
 God leve that ye fynde ay *love of stiel*,
 And longe mote youre lif in joie endure!

(iv.323–6, emphasis mine)

Indeed, the poem’s repetition of tearful distillations harden Troilus into steel, “And this *encrees of hardynesse* and myght / Com hym *of love*, his ladies thank to wyne, / That altered his spirit so withinne” (iii.1776–8, my italics). Like a smith, who increases the “hardynesse” of iron into steel by distillation (when heat strikes “into the interior of the iron and burns up the moist material in it”), the metallic process of falling in love “altered his spirit so withinne.” With each new episode of weeping, however, Troilus “becomes harder and harder” and risks becoming “too much dried out” from his tearful distillations. Furthermore, “love of stiel,” too, “gets harder when heated . . . it breaks and shatters at a blow.” Even so, iron is still the most ignoble of the other metals because the mercury trapped inside is “very earthy, heavy, dirty, and impure . . . and it rusts easily because of the burning of its Sulphur.”⁶⁸ However, this mercury trapped in Troilus’s impure body, I will argue, is released with the “sublimation” of his soul. At any rate, we are made aware of a clear and consistent metaphor with each new association of the hero with the metal steel, whether it be a “wal of stiel,” “helmed is of steel,” “Trew as stiel,” or with “love of stiel.”

Before the chemical combination of two opposing substances can actually take place (between sulphur and mercury), the alchemist must first distill and purify his raw material. In Book 3, Criseyde distills the literal truth with newly purified tears:

With that a fewe brighte teris newe
 Owt of hire eighen fille, and thus she seyde,
 “Now God, thow woost, in thought ne dede untrew
 To Troilus was nevere yet Criseyde.”

(iii.1051–4)

Ironically, Criseyde does indeed distill a statement of truth. Troilus, however, refrains from revealing the actual truth of the matter to Criseyde (i.e., the fact that he is *not* envious of a rival lover). Burying the truth deep within his heart causes him, in physiological terms, to withhold

the distillation of his tears. He seals off the volatile material of his body-alembic, which causes the fixation of alchemical "spirits":

For it thoughte hym no strokes of a yerde
 To heere or seen Criseyde, his lady, wepe;
 But wel he felt aboute his herte crepe,
 For everi tere which that Criseyde asterte,
 The crampe of deth to streyne hym by the herte.

.....
 Therwith the sorwe so his herte shette
 That from his eyen fil there nought a tere,
 And every spirit his vigour in knette,
 So they astoned or oppressed were.
 The felyng of his sorwe, or of his fere,
 Or of aught elles, fled was out of towne;
 And down he fel al sodeynly a-swowne.

(III.1067-92)

According to Galenic medicine, the mind and the soul both maintain a physical presence in the human body, a theory of physicalism first propounded by Aristotle. Indeed, Galen "believed that even rational capacities are based in the physical condition of the body, and that bodily health directly affects mental capacities."⁶⁹ As Jill Mann points out in her influential article on Troilus's swoon, "Unable to discover an issue in speech or action, Troilus's mind is turned in on itself, trapped in deadlock, and this condition of his mind is so acute that it transfers itself to his body."⁷⁰ I would take this one step further to say that his heart, which contains ready matter for distillation, is "shette" so "That from his eyen fil there nought a tere"—by extension, the truth does not distill from his body in Criseyde's presence. Like the fixation of volatile spirits in matter throughout the formation of the stone, "every spirit his vigour in knette." Troilus's sorrow then causes his "spirit," or volatile mercury, to become hermetically sealed within the body-alembic. In short, he fixes his volatile *trouthe* deep inside the heart/athanor.

The swoon is also reminiscent of an earlier dramatization of his body's chemical flux. In the *Canticus Troili*, Chaucer employs Petrarchan oxymorons to describe the chemical action between water (cold and wet) and air (hot and dry):

And if that I consente, I wrongfully
 Compleyne, iwis. Thus possed to and fro,
 Al sterelees withinne a boot am I
 Amydde the see, bitwixen wyndes two,

That in contrarie stonden evere mo.
 Allas, what is this wondre maladie?
 For hote of cold, for cold of hote, I dye.

(i.414–20)

The lover’s body becomes an arena for the warring forces of Aristotelian qualities. Similarly, in Book 5, “often was his herte hoot and cold” (v.1102). Interestingly, Mary Carruthers has shown how scriptural and meditative reading in the Middle Ages, which “calls for antithetical swings of contradictory experiences, was rooted in the notion of the natural ‘qualities’ (hot, cold, wet, dry) and the ways they harmonize one another’s effects.”⁷¹ Along these lines, contrarious qualities might also besiege Criseyde who is “Now hoot, now cold; but thus, bitwixen tweye” (ii.811). Recall the alchemical process described in the *Canon’s Yeoman’s Tale*: “Another seyde the fir was over-hoot—/ But, be it *hoot or coold*, I dar seyde this, / That we concluden everemoore amys” (viii.955–7, emphasis mine). As evident in Troilus’s swoon, chemical combination is a vital process in the regulation of bodily humors.⁷² Moreover, chemical combination is the ultimate *natural* cause for human emotion. The material causality of human health—well noted in the Galenic and physicalist literature about the mind’s interconnectedness to the human body—no doubt complicates medieval notions of free will and even lends support to the poem’s prevailing determinism.

Pandarus as Alchemical Physician: Healing a “Sick” Metal

After the joyous celebration of romantic love in Book 3, Pandarus begins to lose control of alchemy’s process and attempts to cure Troilus, acting as his alchemical physician. Not surprisingly, a significant number of alchemists in the Middle Ages were also celebrity physicians. In 1303, Bernard of Gordon, who was studying in the Faculty of Medicine at Montpellier, makes note of alchemy’s medical uses in his *Lillium medicinae*.⁷³ Similarly, Constantine of Pisa, a physician who wrote a treatise on alchemy, “claims to have written his treatise as a parallel to one of the basic mediaeval medical textbooks, the *Pantechne* (called in usual mediaeval fashion *Liber pantegni*) of Constantine the African (d.c. 1087).”⁷⁴ Although connections between the new techniques deployed in alchemy and the medieval developments in medicine lie beyond the scope of this chapter, it is worth noting that alchemists often used familiar concepts from medicine to describe their craft. As we have seen already, it was commonplace to link alchemy to human fetal development in medicine. Related to this, alchemists readily compare a sick patient’s corrupt body to the debased

“body” of a sick metal: this analogy describes the complicated process of “perfecting” metals. By way of example, the author of the *Libellus de alchimia* makes the analogy of abnormal fetal development in humans to the contraction of “disease” in metals in order to support a theory for the different species among metals:

Just as a boy in the body of his mother, contracts infirmity from a diseased womb by reason of the accident of location and of infection, though the sperm is healthy, yet, the boy becomes a leper and unclean because of the corruption of the womb. Thus it is in metals which are corrupted, either because of contaminated sulphur or foetid earth; thus there is the following difference among all the metals, by which they differ from one another.⁷⁵

This comparison also points to the fact that both physicians and alchemists share a unique role in the manipulation of the intrinsic “substance” contained in matter. Unlike a painter or sculptor, these masters of the protean are not preoccupied with the exterior “accidents” (e.g., color or shape). Rather, alchemists and physicians deal with the more fundamental stuff of matter, the four elements that constitute the physical makeup of material “bodies,” and both theoretical alchemy and practical medicine are therefore linked by the chemical basis of the four “humors” latent in both human beings and metals.⁷⁶

Both Roger Bacon and Albertus Magnus develop the notion of an alchemist as one who heals a sick metal by removing its baser qualities from the “body.” The *Liber mineralium* provides a clear exposition:

But then we must say that *skilful alchemists proceed as skilful physicians do*: for skilful physicians, by means of cleansing remedies clear out the corrupt or easily corruptible matter that is preventing good health—for good health is the end which the physician has in mind—and then, by strengthening nature, they aid the power of nature, directing it so as to bring about natural health. For thus undoubtedly health will be produced by nature, as the efficient cause; and also by art, as the means and instrument. And we shall say that skilful alchemists proceed in entirely the same way in transmuting metals.⁷⁷

The alchemist “perfects” a sick metal by removing the root of its disease—that is, by excising its baser qualities. Avicenna famously declared that specific forms of a metal cannot be transmuted into other specific forms unless they are first reduced to prime matter (*materia prima*). After the removal of a specific form from a metal (for instance, lead), the alchemist then works on indeterminate matter, the *prima materia* for all

the metals. At this point, the alchemist then “cures” the “sick” metal by introducing the perfect form of gold. Albertus therefore quotes Aristotle saying that lead is leprous gold.⁷⁸ In a similar vein, Constantine of Pisa notes that Jupiter (i.e., tin) “is called *scata tottotin*, i.e. evil excrement of a rotten body, because it corrupts all other bodies in the way leprosy does.”⁷⁹

Chaucer makes specific reference to the idiom of “curing” a sick metal in the *Squire’s Tale*:

They speken of sondry *hardyng of metal*,
And speke of *medycynes* therwithal,
And how and whanne it sholde yharded be,
Which is unknowe, algates unto me.

(v.243–6, my italics)

The sick metal requires various “medycynes” (chemicals) in order to refine it into hardened steel. This medical trope also appears in the *Canon’s Yeoman’s Tale*. Even though the false Canon (or false alchemist), “wolde infecte al a toun” (viii.973), it is, in fact, the veritable art of alchemy that “wole infect” its own initiates. An aspiring alchemist remains conspicuous because

The savour wole infect hym, trusteth me.
Lo, thus by smellyng and threedbare array,
If that men liste, this folk they knowe may.

(viii.889–91)

The *Riverside* cites Grennen in line 889 for the double meaning of the word “infect,” which incorporates “the technical sense of Lat. *Inficere*, used of corrupting of metals and acids by inferior substances.”⁸⁰ However, we might also find a parallel here in a common trope for lovesickness: an alchemist’s appearance, his “smellyng and threedbare array,” betrays the signs and symptoms of lovesickness. Moreover, the relevant medical thread of alchemy is supported by the narrator’s final plea to God: “God sende every trewe man boote of his bale!” (viii.1481). As will become clear, the notion of lovesickness in the *Troilus* is especially relevant to alchemy’s medical topos.

Needless to say, Chaucer repeatedly identifies Pandarus as a medical doctor set on healing Troilus’s *melancholia* or lovesickness (iv.435–6). As Troilus’s alchemical physician, Pandarus attempts to apply the art of healing to his lovesick patient as though he were a sick metal. This is

supported by yet another alchemical reference, which occurs in the voice of Troilus only a few stanzas before the “lambyc” metaphor in Book 4:

Thow moost me first transmewen in a ston,
 And reve me my passiones alle,
 Er thow so lightly do my wo to falle.

(iv.467–9)

According to Troilus, Pandarus resembles an alchemist in his attempts to achieve the impossible task to “transmewen in a ston.” Significantly, these lines are independent of the *Filostrato*. As discussed earlier, a physician purges his patient of disease in the same manner as an alchemist who “removes” specific forms from a sick metal. The alchemist treats metals (e.g., iron) with “watres corosif” (*CYT*, viii.853)—that is, corrosive solutions—in order to remove its metallic form. In this way, the alchemist reduces the raw material to primary matter, which then allows for the introduction of new, specific forms into matter. As the *Liber mineralium* instructs, “And alchemy also proceeds in this way, that is, destroying one substance by removing its specific form, and with the help of what is in the material producing the specific form of another [substance].”⁸¹ Pandarus, as the alchemical physician, attempts to *remove* Troilus’s “passions alle” and then introduce *new* forms in the lovesick patient—that is, the felt love for another Trojan female who will replace Criseyde. Troilus likens this action to the difficult task of removing specific forms from a debased metal. Like an alchemist who fails to purge the sick metal of its intrinsic, baser forms, Pandarus cannot remove the interior forms that sicken Troilus’s steel-like “body.” As a result, transmutation cannot take place and he is unable to “transmewen [Troilus] in a ston.”

Whatever material substance there is to Troilus’s body, Pandarus represents a false *pseudo*-alchemist who, ironically, is unable “to chaungen” or transmute his own affections toward the lady he loves all too dearly (iv.484–7). How, then, might this self-proclaimed alchemist possibly attempt to change Troilus? What is more clear, Troilus’s response consistently uses the language of alchemy to articulate conceptual ideas of change. It is not surprising that the narrator crystallizes Troilus’s alchemical metaphors a few lines later with reference to the distillation of liquor out of an alembic, a fitting conclusion to Troilus’s sophisticated reply.

“Mercurye” and the Subliming of Troilus

I return to the distillation of Troilus’s metallic body and examine how these alchemical materials will shape the poem’s end. Of course, Pandarus

reminds us that “th’ ende is every tales strengthe” (II.260). Even now, this conventional truism may serve Chaucer’s audience as a tacit encouragement to extrapolate meaning from the conclusion of *Troilus and Criseyde*. Still, the “ende” and “strengthe” of the poem strikes modern readers as perhaps *too* strong. Indeed, narratorial anxiety prompts not one but many endings to the Troy legend, what one critic finds to be “an almost *parodic* ‘piling on’ of traditional medieval closure devices.”⁸² Moreover, the narrator empties a stockpile of apostrophes to different readers, which, I think, has the formal effect of beating a Trojan horse, one that nonetheless will surprise us with the unforeseen. Many critics have noted the ways in which the ending catches us off-guard with the unexpected, even when we are made aware of ironies embedded throughout the narrative.⁸³ Sheila Delany has pinpointed Chaucer’s use of an alienation technique, the so-called “A-effect,” in the poem’s conclusion, and Murray J. Evans demonstrates how “the familiar is ‘made straunge’” with the “four ‘defamiliarized’ elements of author, ending, sources, and audience.”⁸⁴ The most striking aspect of Chaucer’s ending is, arguably, the narrator’s abrupt renunciation of his own poetic material, to which he had earlier devoted so much careful attention. This narratorial stratagem, which follows Troilus’s apotheosis, uses a firm abnegation (not unlike Chaucer’s *Retractions* at the end of the *Canterbury Tales*) that instills an aftertaste far more bitter than sweet, leaving us to wonder “how to reconcile the *contemptus mundi* of the conclusion with the earlier sympathetic portrayal of the lover’s pains and joys.”⁸⁵ Even so, the “swetnesse semeth more swete, / That bitternesse assaied was byfor” (III.1219–20). With some success, Chaucer scholars have considered medieval rhetorical tradition and have looked to the poet’s source material (Boccaccio’s *Il Filostrato* and *Teseida*) for contrasting elements and specific points of originality with interesting but no less perplexing results.⁸⁶ In fact, the last 20 years of extant studies on *Troilus* still serve to reinforce Barry Windeatt’s comment that the ending “has prompted almost as many interpretations as there are essays about *Troilus*.”⁸⁷

One other critical method might still serve us here, however. Let us begin with a quotation from a similarly constructed ending elsewhere in Chaucer’s poetry—that is, the concluding stanza to the *Canon’s Yeoman’s Tale*:

Thanne conclude I thus, sith that God of hevene
 Ne wil nat that the philosophres nevene
 How that a man shal come unto this stoon,
 I rede, as for the best, lete it goon.
 For whoso maketh God his adversarie,

As for to werken any thyng in contrarie
 Of his wil, certes, never shal he thryve,
 Thogh that he multiplie terme of his lyve.
 And there a poynt, for ended is my tale.
 God sende every trewe man boote of his bale!

(CYT, viii.1472–81)

Chaucer's narrator here explicitly repudiates the subject matter of his prologue and tale—that is, the philosophers' "stoon" and the alchemist's dream to "multiplie" gold. Like the *Troilus* narrator's ultimate rejection of his own poetic material and the pagans of his Trojan world, which he had recreated with the subtlety of extraordinary detail and which we come to know so intimately, there is a thematic and stylistic disjunction between, on the one hand, the Yeoman's forewarning to relinquish the quest for the philosophers' stone—"I rede, as for the best, lete it goon"—and, on the other hand, the previous 1466 lines in which the narrator so carefully expounds on the sophisticated theory and jargon behind the Arabic science. In other words, we find a strong *Troilus*-parallel in the Yeoman's injunction to "lete it goon": to let go of our earthly attachments to alchemy and its false promise of material gain. However, like the redirection and redefinition of "love" we encounter at the ending of *Troilus*, the Yeoman's concluding lines do not abjure alchemy *per se*, as the narrator is willing to amalgamate the Arabic science into an orthodox Christian perspective. Whatever critical readings there are to the *Canon's Yeoman's Tale*, the conclusion teaches us that all knowledge, including alchemy's secrets, belong to the Christian "God of hevене," to whom the narrator submits in an open acknowledgement of "his wil."⁸⁸ More important, the Yeoman's final vision of Christ and the Christian God (viii.1467–81), though conventional in medieval literature, is nonetheless unexpected here, for Christ is, implicitly, the true *Lapis Philosophicus* (the Philosophers' Stone), who provides the grace of divine wisdom "where it liketh to his deitee / Men for t'enspire, and eek for to deffende / Whom that hym liketh; lo, this is the ende" (viii.1469–71).

In this light, the *moralitas* with which the *Canon's Yeoman's Tale* concludes can perhaps illuminate the more unfamiliar elements of the *Troilus* ending, which is, after all, one of the most disputed endings of English Literature. Like the Yeoman, the *Troilus* narrator rejects the central topics of his storytelling in favor of that "sothfast Crist," who "nyl falsen no wight" (v.1860, 1845). He then polarizes the sublunar realm of *false*, human love (*amor*) from the heavenly bliss of the only *true*, divine love (*caritas*). The presentation of bifurcated love in *Troilus*, as well as the concomitant rejection of false love, serves as a philosophical analogue to the conclusion made by the Yeoman, who merges the paganism of the Arabic

science into a Christian scheme. In fact, the commonalities between the invalidation of human, false love in the *Troilus* and the Yeoman's rejection of material, false alchemy are much closer, and their implications far more significant, than that which has just been shown in my brief analysis. To see how these two literary works match up here, consider Charles Muscatine's summary analysis of the ending to the *Canon's Yeoman's Tale*:

This philosophical postscript expresses the ruling attitude toward alchemy in the poem. In the light of it, the poem expresses neither credulity nor skepticism, but rather a distinction between false alchemy and true, between men's alchemy and God's. The body of the poem, the first two parts, is an exposure of the alchemy without God, of faith in earth. Its skepticism is that of the believer, not of the scientist, who sees in technology another secular religion, as seductive in its way as the religion of Love.⁸⁹

Muscatine's passing remark that false alchemy resembles “the religion of Love” is one that merits exploring, for the *Troilus* narrator directly relates courtly love conventions to alchemy at varying points in the poem.

However, before we analyze the ending of the *Troilus* in more detail, we need to take a step back to consider the significance of Troilus's funeral. First, it is worthwhile to make note of alchemical discourses in the Middle Ages pertaining to physical matter and the spirit. Historically, the intricate dynamic between the “body” (*corpus*), the “spirit” (*spiritus*), and the “soul” (*anima*) set discursive texts on alchemy into more philosophical territory. Not surprisingly, alchemists exploit some of the fundamental ambiguities of these terms. Does *corpus* refer to metallic bodies, corporeal bodies, or both? Although Albertus counters the claim that stones possess a soul (*anima*) and are therefore vaguely “alive,” his compulsion to write a long excursus on the topic is indicative of the fact that the majority of alchemists in the period did indeed consider the special generative properties of metals as evidence of a soul.⁹⁰ Despite the ambiguity of terms, it is widely acknowledged that all metals embody, in some form or other, *corpus* and *spiritus*. Chaucer's “book Senior” illustrates the kind of pronouncements that Albertus considered excessive:

Aes nostrum est sicut homo habens spiritum, animam & corpus . . . sicut convertitur semen solum in matrice praeparatione naturali (163–4)

(Our copper is like man, having spirit, soul, and body . . . just as a sperm is converted only in the womb through natural preparation.)

Et sicut dixerunt sapientes. Homines attrahunt spiritum ex aere, ex quo nutu Dei consistit spiritus eorum. *Similiter aes sapientum attrahit spiritus ex humiditate eorum, & virtutem acquirit, & crescit, illud aes, & nutritur, sicut caeterae res augmentum recipientes.* (158)

(And just as the wise men say, humans draw their spirit from the air, which, by the will of God, constitutes their spirits. Likewise does copper of the wise draw spirit from their humidity and acquire strength, and that copper rises and is nourished, just as other things receive an augment.)

The above terms, deliberately borrowed from the human body, actually have precise meaning in alchemy. In the case of the *De anima*, the spirit (prepared mercury) is united to the body (i.e., a metal already reduced to sulphur and mercury), and the elixir (the *calx* of a base metal) is then projected into the prepared metal, giving it a soul to make gold or silver.⁹¹ In simple terms, it is the spirit that unites the body of a metal to its soul. Constantine of Pisa thus clarifies,

Et quemadmodum corpus et anima non possunt uniri ad inuicem nisi mediantibus spiritibus naturali et uitali, sic corpora omiomera, id est metalla, non possunt uniri, nec profundare siue perpetuan nisi mediantibus spiritibus, qui spiritus isti et in alchimia sunt maxime necessarij, et sine quibus nihil potest fieri

(And just as the body and the soul cannot be united to one another except by means of natural and vital spirits, so the homeomerous bodies, that is, the metals, cannot be united nor changed in depth, nor made perdurable, except by means of spirits of such a kind as are most necessary in alchemy and without which nothing can be accomplished.)⁹²

The *Aurora* author reconciles the monistic philosophy found in alchemy (“spirit, soul, and body are one and all things are of one”) with medieval Christian doctrine, declaring that “Like as the Father is, so is the Son, and so also is the Holy Spirit, and these three are One, [which the Philosopher would have to be] body, spirit, and soul, for all perfection consists in the number three, that is, in measure, number, and weight.”⁹³ Arabic texts on alchemy provided the friars with suitable material for biblical reinterpretation. By way of example, the Latin translation of the highly authoritative *Turba philosophorum* instructs the artist to pound and slay the base metal to the “death” in order to release its volatile mercury from the grosser parts of the “body”:

Hic enim spiritus, quem quaeritis, ut eo quodlibet tingatis, in corpore occultus est et absconditus, *invisibilis quemadmodum anima in humano corpore.* Vos autem, omnes huius artis investigatores, nisi hoc corpus diruatis et

imbuatis, teratis ac parce et diligenter regatis, quousque a sua spissitudine extrahatis et in tenuem spiritum et inpalpabilem vertatis, in vanum laboratis.

(For this spirit that you seek, so that you might change its tinge to your liking, is concealed in the body, and hidden away from sight, *even as the soul in the human body*. But you seekers after the Art, unless you disintegrate this body, imbue and pound sparingly and manage it diligently, until you extract it from its grossness [or grease], and turn it into a tenuous and impalpable spirit, have your labor in vain).⁹⁴

Not surprisingly, alchemical writers of the Latin West adapted these commonplace instructions from alchemical recipes to medieval Christian allegory. The divine mercury, attached to the “body” of sulphur, was comparable to the divinity of Christ in human flesh. Christ’s death and resurrection was therefore analogous to the sublimation of divine mercury within the alchemical flask, “hidden away from sight, even as the soul in the human body.” In the pseudo-Arnoldian *De secretis naturae*, the body of Christ experiences physical beatings and scourges, a veiled allegory for the pounding of matter in order to extract the volatile substance.⁹⁵ Similarly, Chaucer stresses the importance of “mercurie mortifie” (VIII.1431) in the *Canon’s Yeoman’s Tale*. In this way, quicksilver (mercury) is no longer “quick” (alive) but rather hardened “silver.” The Yeoman appeals to the authority of Hermes, who claims that mercury “Ne dyeth nat but if that he be slayn” (VIII.1436). In other words, a body’s “death” remains an important, necessary step that must precede all transmutations of matter and form. When alchemists mortify the body, writers like Petrus Bonus draw special attention to the relationship between the body, the soul, and the spirit:

And yet body, soul, and spirit are not three things, but different aspects of the same thing. As bond between body and soul, the spirit is said to prevail during the Magistry from beginning to end; so long as the substance is volatile and flees from the fire, it is called soul; when it becomes able to resist the action of the fire, it is called body.⁹⁶

In other words, the mercurial “spirit” mediates between the metallic “body” and the inner “soul.” The *Turba* provides another interesting example (again, with comparison to the *human* body):

huius artis definitio est corporis liquefactio, et animae a corpore separatio, eo quod aes ut homo et animam habet et corpus. Oportet igitur vos omnes, doctrinae filios, corpus diruere et animam ab eo extrahere.

Quare philosophi dixerunt, quod corpus non penetrat corpus, verum subtile naturae, quod est anima, [quae] corpus penetrat, et tingit. In natura est igitur corpus et anima (166)

(the definition of this Art is the liquefaction of the body and the separation of the soul from the body, seeing that copper, like a man, has a soul and a body. Therefore, it behooves you, O all you Sons of the Doctrine, to destroy the body and extract the soul therefrom! Wherefore the Philosophers said that the body does not penetrate the body, but that there is something subtle of nature, which is the soul, and it is this which tinges and penetrates the body. In nature, therefore, there is a body and there is a soul). (193)

Our brief excursus on alchemy's instructions for the extraction of the "soul" from the metallic "body" is relevant to our discussion of *Troilus and Criseyde*. In fact, Troilus's specific instructions to Pandarus for the preparation of his corpse at his funeral—lines not found in the *Filostrato*—imitate alchemical recipes for the extraction of the soul from the metallic body via spiritual mercury. Following the poem's many cross-references to distillation imagery, the death of Troilus, I think, signifies the poem's final and most compelling distillation of matter. What is more, Troilus literally subjects his own body to direct "calcination" (the reduction of solid matter into powder by fire). The furnace his "body brennen shal to glede" (v.303). More important, the alchemical fires will consume this inner substance, his "herte," and convert it into "The poudre" (v.309). This instantly recalls the so-called "poudre," known as the philosophers' stone, of the *Canon's Yeoman's Tale* (e.g., viii.760, 807, 1133, 1148, 1272, and 1310). The reduction of Troilus's body-alembic into fine powder is thus related to the alchemical process of sublimation by fire. According to Constantine of Pisa, subliming (*sublimare*), "est grossarum partium in fundo dimittere substantiam, et subtiles partes per subtilem uaporem per ignem et mediante alembico ad alta + . . . + trahere, et sic in subtilissimum puluerem reducere" (Subliming is to let the substance of the coarse parts sink to the bottom and to draw off the fine parts in a fine vapor with fire and by means of an alembic, and thus reduce it to the finest of powders.)⁹⁷ Among the various ingredients found in the alchemist's laboratory are "Poudres diverse, ashes" (*CYT*, viii.807) and "sondry vessels" (*CYT*, viii.791). In fact, the alchemist's powder supposedly contains "brent bones, iren squames, / That into poudre grounden been ful smal; / And in an erthen pot how put is al" (viii.759–61). This alchemical process is not unlike Troilus's instructions to place the remains of his body into a special vessel. John Reidy's explanatory notes to the *Canon's Yeoman's Tale* describe how making the philosophers' stone "usually called for 'calcination' (*CYT*, viii.804) of the original material by heating and pounding or

by attacking with acids (‘mercury’) or both; this reduced the material to ash, or dead matter” (p. 947).

After the “fir and flaumbe funeral” (v.302) transform Troilus’s heart into this special, alchemical “poudre,” his soul then ascends with “Mercurye” (v.321). Significantly, Chaucer here not only refers to the god Mercury, but also alludes, I think, to the spiritual, volatile mercury of alchemical lore. After all, spiritual mercury does indeed ascend with the soul as “sublymed mercurie” (CYT, VIII.774) after the death of its metallic “body” (v.303). Like a diseased metal (iron/steel), Troilus’s illness—his “maladie” (v.316)—results in the death of his metallic body, which is then perfected into gold. In fact, it is precisely actual “gold” (v.312) that encloses the hero’s remnants and inhumes his heart. Troilus employs the vocabulary of alchemy to describe the transmutation of his body—the individual “thing” (*res*) that is the actual body—into the world of incorporeal universals.

What is still more interesting, though, is Troilus’s *real* funeral, which occurs only a few hundred lines later in the poem. Troilus is again “slayn” (v.1807), and “Mercurye” (v.1827) then guides his “goost” (v.1808, his soul) to the eighth sphere, the sphere of Luna. Following the *imitatio Christi*—Christ “First starf, and roos, and sit in hevene above” (v.1844)—Troilus ascends to the heavens “In convers letyng everich element” (v.1810).

And whan that he was slayn in this manere,
 His lighte goost ful blisfully is went
 Up to the holughnesse of the eighth spered,
 In convers letyng everich element;
 And ther he saugh with ful avysement
 The erratik sterres, herkenyng armonye
 With sownes ful of havenysssh melodie.

And down from thennes faste he gan avyse
 This litel spot of erthe that with the se
 Embraced is, and fully gan despise
 This wrecched world, and held al vanite
 To respect of the pleyn felicite
 That is in hevene above; and at the laste,
 Ther he was slayn his loking down he caste,

And in hymself he lough right at the wo
 Of hem that wepten for his deth so faste,
 And dampned al oure werk that foloweth so
 The blynde lust, the which that may nat laste,

And sholden al oure herte on heven caste;
 And forth he wente, shortly for to telle,
 Ther as Mercurye sorted hym to dwelle.

(v.1807–27)

It is peculiar that Mercury is *not* named here as a god. I argue that Troilus's "goost" ascends via the spiritual, volatile "Mercurye" when the flames of the funeral pyre consume the body. In the fourteenth century, alchemical practitioners universally adopted the so-called "mercury-alone" theory of transmutation, insisting that transmutation was only possible if metals were first reduced to mercury, their primary matter. Like the metallic body of the *Canon's Yeoman's Tale*, Troilus is "slayn" in order to complete his sublimation. The divine, volatile mercury guides the sublimation of the soul after the alchemist slays the body with sulphur and elemental fire. His bodily transmutation to "the poudre" allows for the actual distillation of his intrinsic, "radical" substance, which sublimes to the heavens. The *Liber mineralium* distinguishes between two types of extraction:

We have given as an example of this the liquor distilled from wine, in which there is one sort of unctuousness that is light and inflammable, easily distilled and, as it were, accidental. The other sort is mixed with the whole substance of the liquor itself, and is not separable from it except by the destruction of its very substance; and this is not combustible. And it is the same in all things produced by nature.⁹⁸

The extraction of tears from the human body represents an incomplete, "accidental" distillation: the soul still remains firmly tied to the body when weeping. The "licour" (i.e., the tears of Book 4, lines 519–20) represents distillation of the "accidental" sort, whereas the extraction of Troilus's soul implies the other type of distillation, that which requires "the destruction of its very substance." In contrast to the Trojans at the funeral who weep for his body "so faste" (the same words used to describe Troilus's alchemical tears), Troilus replaces accidental tears with laughter. Only death and destruction allow for extraction of the soul from the grossness of this "wrecched world." Sublimation releases the soul from the fixed matter of "everich element"—the elements earth, water, air, and fire. Consequently, the four elements remain fixed below (i.e., "In convers letyng everich element"). The fifth element (the quintessence) resides "in hevene above" among the "erratik sterres," the seven planets and the seven metals. By contrast, elemental matter remains on "This litel spot of erthe that with the se / Embraced is." Troilus appropriately ascends to the sphere of the moon, which is, of course, highly

significant in alchemical terms, for Luna is a representation of silver and/or Mercury. However, most extant *Troilus* manuscripts have written the seventh sphere, which is also the sphere of Mercury itself! Needless to say, this alternative destination is equally meaningful and appropriate for our alchemical interpretation of the poem.⁹⁹

Following on what we said earlier about Troilus’s imagined funeral, the hero’s actual “sublimation” to the celestial realm not only embellishes the alchemical imagery of his death but also points our attention to alchemy’s more philosophical notions regarding the complex relationship between the fixed, immutable Heaven above and the incessantly changing Earth below. A critical reading of the highly influential *Tabula smaragdina* (Emerald Tablet), the *magnum opus* of alchemical doctrine, provides a template for alchemical interpretations of Troilus’s “radical” distillation.¹⁰⁰ The acclaimed author of the *Tabula* is the so-called Hermes Trismegistus (thrice-greatest Hermes), whom Chaucer explicitly refers to in the *Canon’s Yeoman’s Tale* for the sulphur-mercury theory of alchemy:

How [be] that he which that first seyde this thyng
 Of philosophres fader was, Hermes;
 He seith how that the dragon, doutelees,
 Ne dyeth nat but if that he be slayn
 With his brother; and that is for to sayn,
 By the dragon, Mercurie, and noon oother
 He understood, and brymstoon by his brother,
 That out of Sol and Luna were ydrawe.

(VIII.1433–40)

As we shall soon see, Chaucer here glosses the *Tabula* in order to elucidate the complexity of the interrelationship between earthly “brymstoon” and his brother, the celestial “Mercurie,” whom “ne dyeth nat but if that he be slayn / *With his brother*” (emphasis mine). The oppositional forces inherent in sulphur and mercury are nonetheless inextricably tied to each other like heaven and earth, “Sol and Luna.” As the *Tabula* states, “Pater ejus sol, mater ejus luna” (The father thereof is the Sun, the mother the Moon).¹⁰¹

In the *Tabula smaragdina*, the subject is change and Nature’s alchemical workings on all creation. It provides pithy statements on the unity of all matter, the correspondences between heaven and earth, the dominance of the Sun and Moon, and the penetrating action of fire on solid bodies, which causes sublimation or distillation. The *Tabula* then ends with reference to the Thrice-Great Hermes and the workings of the Sun on all things. According to alchemical lore, as stated in the eighth-century *Book*

of the *Secret of Creation* (attributed to Balinas, who is, in fact, mentioned by Chaucer in *HF* III.1273 as “Hermes Ballenus”), Galienus Alfachim (the Physician) discovered the corpse of Hermes Trismegistus in a cave, wherein the legendary figure, lying hidden beneath his statue, clasped a plaque of green emerald containing his most profound secrets, written in Syriac. From this story, we can infer that the figure of Hermes intentionally buries his secrets with him in the subterranean sepulcher, safeguarding this knowledge from the unworthy and those who would abuse it. Alternate versions of the story indicate Alexander the Great as the one who discovers Hermes’ tomb or else Sarah, the wife of Abraham, who finds the plaque in a cave near Hebron.¹⁰² Pseudo-Arnald of Villanova, Roger Bacon, and Albertus Magnus provide Latin translations of and commentaries on this ancient text, which also appears in a variety of sources, such as the *Turba philosophorum* and the *Margarita preciosa novella*. More important, the *Tabula* is recited again in the *Secreta secretorum*, a text known by Chaucer and arguably “the most popular secular book of the Middle Ages.”¹⁰³ In fact, this pseudo-Aristotelian work is one of the scientific texts “whose influence has been detected in the *Canterbury Tales*.”¹⁰⁴ Even so, Chaucer might have encountered the text of the *Tabula* in a number of ways. It is Albertus who provides the earliest Latin commentary on the *Tabula*, which he calls the “secretum secretissimorum suorum,” not unlike the “the secree of the secretes” (VIII.1447) referred to in the *Canon’s Yeoman’s Tale*. Albertus systematically decodes the text’s cryptic utterances in a highly lucid gloss, which I should like to quote in order to show how medieval commentators were willing to appropriate the *Tabula* for a core theory supporting alchemical techniques:

And this, the greatest skill of the alchemists, Hermes teaches in his *Secret of Secrets*, saying metaphorically: the stone “gently, with great skill, ascends from earth to heaven, and again descends from heaven to earth. Its nurse is the earth, and the wind carried it in its belly.” For intending to teach the operations of alchemy he says it “ascends to Heaven” when by roasting and calcination it takes on the properties of Fire: for alchemists mean by *calcination* the reduction of material to powder by burning and roasting. And the material “again descends from heaven to earth” when it takes on the properties of Earth by *inhumation*, for inhumation revives and nourishes what was previously killed by calcination. And when he says that “the wind carries it in its belly” he means the *levigation* of the material, raising it to the properties of Air. And [the reason] why he says that the wind carries the material in its belly is that, when the material is placed in an *alembic*—which is a vessel made like those in which rose-water is prepared—then, by evaporation it is rendered subtle and is raised toward the properties of Air: and that is why he says, “the wind carries it in its belly.” And there

distills and issues from the mouth of the alembic a watery or oily liquor with all the powers of the elements.¹⁰⁵

Needless to say, the technical vocabulary Albertus uses to gloss the *Tabula* is relevant to our discussion about Troilus’s death and ascension, for Chaucer borrows the language of alchemy as a means of understanding the constant and inexorable chemical changes in a volatile world. By way of example, in the *Troilus* passage, “His lighte goost ful blisfully is went / Up”

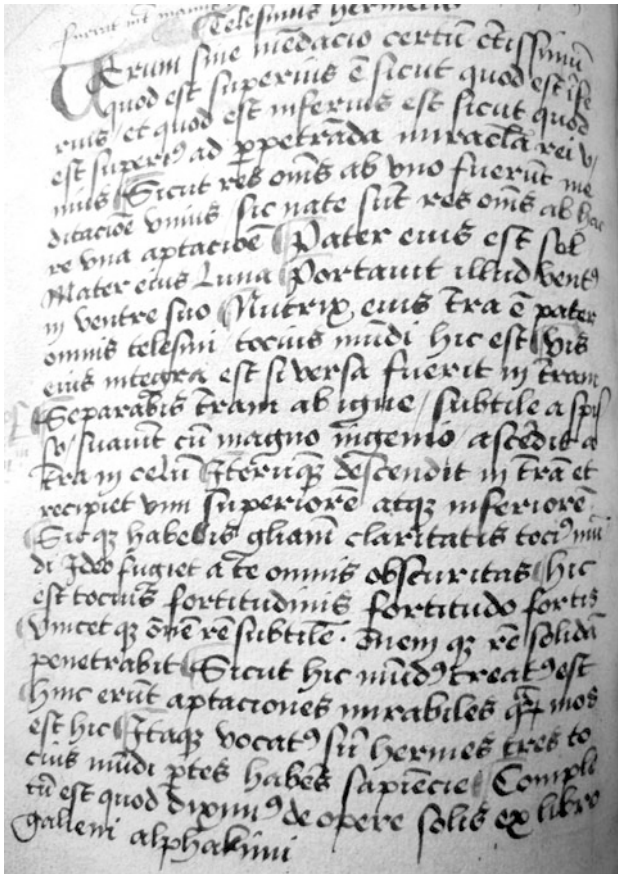


Figure 4.4 Trinity College, Cambridge, MS O.8.25 (James’ catalogue, 1400), England, early fifteenth century, iii, fols. 72–5 (fol. 72v). The famous *Tabula smaragdina* (Emerald Tablet). By permission of the Master and Fellows, Trinity College, Cambridge.

(v.1808) in the same manner as the “*levigatio* [making light] of the material.” Troilus’s body is destroyed by calcination (“the reduction of material to powder by burning and roasting”) in the sense that his “body brennen shal to glede”—that is to say, his body is reduced to the *calx*. His body and heart literally “ybrend shal torne” into “the [alchemical] poudre.”

The dynamic interaction of celestial harmony with earthly matter remains a cornerstone of alchemical philosophy. In the narrator’s account of Troilus’s sublimation, the hero first ascends from beneath the inner sphere of the moon (on earth, the location for the constant transmutations of matter). He then reaches the eighth sphere bordering the immutable, starry heavens. At this point, bidirectional movements between heaven and earth continually take place in the narrative. Initially, the narrator reflects on “The erratik sterres, herkenyng armonye / With sownes ful of hevenyssh melodie” (v.1812–13). However, his focused gaze returns to “This litel spot of erthe” (v.1815). In other words, the harmony and perfection of the celestial realm does not replace the soul’s memory of its previous life experiences on Earth, and “down from thennes faste he gan avyse” (v.1814). Not long before the narrator meditates on “This wrecched world” (v.1817), he again contemplates “the pleyn felicite / That is in hevене above” (v.1818–19). But once more, his thoughts shift focus and “his lokyng down he caste” (v.1820) on earth at the Trojans weeping over his death. Finally, the narrator compels his audience on earth to let their hearts “on heven caste” (v.1825). In the course of three stanzas, the narrator reverses the direction of ocular motion at least five times, constantly shifting our perspective with rapid energy, if not with anxious nervousness. This constellation of perspectives and the back-and-forth motion between the dual realms that inhabit either side of the lunar sphere bring to mind a statement from the *Tabula*, which is indeed the most repeated, authoritative phrase of medieval alchemy:

Suaviter cum magno ingenio ascendit a terra in celum. Iterum descendit in terram, et recipit vim superiorem atque inferiorem

(With great sagacity, it ascends gently from earth to heaven. Again, it descends to earth, and unites in itself the force from things superior and things inferior).

There exists an imperceptible conduit that connects the mutable, earthly region to the immutable, celestial realm. While Troilus ascends from earth to heaven, he, too, descends again to earth—that is to say, he reflects on earthly things from his position of superiority in heaven. The *Tabula smaragdina* also develops this notion:

Quod est superius est sicut quod inferius, et quod inferius est sicut quod est superius. Ad preparanda miracula rei unius

(That which is above is like to that which is below, and that which is below is like to that which is above, to accomplish the miracles of one thing).

Although Troilus spurns “this litel spot of erthe with the se,” he nonetheless relies on his experiences on earth as a means of understanding the realm of “hevene above,” echoing the earthly-celestial parallelism we find in the *Tabula*.

Purgative Distillation: Self-Knowledge and the Text as Alembic

Whether or not Chaucer specifically borrows from the *Tabula smaragdina* in this passage is irrelevant to our discussion. What matters here is the fact that the poem’s overflow of distilling tears ultimately culminates with Chaucer’s most spectacular and climactic distillation that ends the poem: the total extraction of Troilus’s soul from his nearly wasted body. Before this intensely dramatic moment, Troilus has repeatedly distilled tears through a quasi-ascetic discipline of distillation, one that undoubtedly belongs to the religion of Love. Interestingly, Mary Carruthers investigates the privileged role of “flooding tears” (*lacrymarum effusio*) in ascetic monasticism, tracing its roots to the desert fathers in Egypt. Christian monasticism, she finds, used “tears as purgative agents, having the potential to clear thought, not just to hinder it.”¹⁰⁶ In particular, her essay examines the writings of Peter of Celle, a twelfth-century monk who composed the *De afflictione et lectione*. In this text, Peter lashes out against his contemporaries, dispassionate academics who do not weep (not even as part of a “willed mental exercise”) at the risk of “spiritual dryness (*acedia*)” (Ibid., 8). According to the medical materials available in this period, tears are considered moist and hot. On the other hand, “laughter and harsh criticism (*parrhêsia*) are condemned by these ascetics because the attitude they can require is hard and cold” (Ibid., 7). Needless to say, Carruthers connects the ascetic practice of weeping tears during monastic reading and prayer to the valuation of Troilus’s own tears. Moreover, this sheds light on the meaning of Troilus’s laughter at the end of the poem, as Carruthers very pointedly remarks:

Troilus has achieved a version of the pagan Stoic ideal of *apatheia*, having freed himself from all emotion. . . Troilus’s arguments are finally fruitless; they do not produce truth, rational though his final view may be. Troilus is ethically more persuasive, truer to the poem’s intent, in his *treuthe* to

Criseyde than in this last dry laughter... Troilus's disembodied laughter is finally too cold, too dispassionate, too pagan and Stoic to be wholly true... Tears are necessary to such moral understanding for they warrant the truth rather than fudging it, and at the very end of Chaucer's poem only the narrator can still produce them. (Ibid., 13–14)

According to Peter of Celle, his contemporaries were so preoccupied with the ends of theological inquiry that they overlooked the importance of monastic discipline and affliction, especially the flooding of tears. The search for God must begin with its physical manifestation in the flesh through *afflictio*. The Aristotelianizing of Christian doctrine is therefore impractical without the accompaniment of ascetic practice. Peter also writes,

To inquire after oneself in God and God in oneself [*se in Deum et Deum in se quaerere*] is indeed the one great question, but it is insoluble if the search is unending and zealous. Actually, another [inquiry] precedes [it], to seek oneself in oneself [*se in se quaerere*].¹⁰⁷

Of course, the idea of self-knowledge is not a new concept to Christian teaching but is prevalent in other medieval texts. For example, in Jean de Meun's *Roman de la Rose*, Nature makes the point that self-knowledge is crucial to the protection of free will (l.17543). Jessica Rosenfeld points out that Nature's "wager that human self-knowledge can trump destiny makes virtuous action contingent on 'knowing thyself,' ... free will and the capacity to resist evil is preserved for the person who knows himself entirely ('se connoit antierement,' l.17762) and this knowledge allows him to love wisely ('aime sage-ment,' l.17761)."¹⁰⁸ Beginning in antiquity, Plato and Aristotle both recognized the importance of cultivating the divine within us through self-reflection. As Rosenfeld also illustrates, Plato's ideas about cognition and self-knowledge had a strong influence on Augustine, who famously compared the self-knowledge of human beings to the Trinity. For Augustine, as Rosenfeld says, "knowledge, self-reflection on that knowledge, and pleasure in that knowledge are the keys of divinity and thus of happiness."¹⁰⁹

In this line, monastic spirituality finds an interesting counterpart in religious alchemy. The fictional Christian recluse, Morienus Romanus, discloses to the Arab prince Khālid the secret of alchemy in the *De compositione alchemiae* (also quoted in chapter 3):

Truly, this matter is that created by God which is firmly captive within you yourself, inseparable from you, wherever you be, and any creature of God deprived of it will die... For this matter comes from you, who are

yourself its source, where it is found and whence it is taken, and when you see this, your zeal for it will increase.¹¹⁰

Crucially, the philosophers’ stone of medieval alchemy resides *in te*. It is our capacity for self-reflection, manifested physically in human flesh created by God. For Franciscans and Dominicans writing about alchemy, the mysterious process of uniting the elixir (the spirit) to the body is fully actualized in the body of Christ, who rose again from the dead, ascending to heaven through a transcendent process of alchemical sublimation. The human body, therefore, is ready-matter for alchemy’s projection of the spirit into the *new* body after death. In fact, Leah DeVun notes how Roger Bacon promulgated the idea that “the equal complexion achieved through alchemical therapeutics was the same as the principle of immortality in the postresurrection body.”¹¹¹ Like the ascetic exercise of weeping tears from human flesh—“seeking oneself in oneself”—alchemists repeatedly distilled the human body, extracting blood and tears from the body-alembic in their search for God in the physical world of sensory experience. Here, Morienus relates the alchemical quest for the philosophers’ stone to the search for God “within you yourself.” In this way, transmutation is both interior (psychological) and exterior (physical). Alchemy’s production of distilled tears provides a catalyst for self-reflection, a crucial step toward the gradual process of inner change. The physical description of Troilus’s funeral, then, in many ways, replicates the *internal* movements that mark the hero’s arc of experience.

In fact, this process is clearly evident in the narrator himself. As Carruthers has shown,

The benefits of coupling affliction with reading can be seen more positively through another character in the poem, the narrator himself. . . above all he is chided for his endless tears—even his verses weep. . . but the narrator’s affliction with ‘flooding tears,’ . . . allow him to know and to understand what he has read; they create and sustain the tenor of the story. Neither a symptom of lover’s malady nor a soul-sickness, they are the means for us all to arrive at understanding the petition for mercy with which the poem ends.¹¹²

Chaucer indeed links the production of tears with the varied process of poetic composition. At the poem’s beginning, the narrator invokes Thesiphone that “thow help me for t’endite / Thise woful vers, that wepen as I write” (1.6–7). Lines of verse *literally* distill purified tears of sorrow, smudging the ink on the author’s parchment. The act of reading can, therefore, also be linked to chemical distillation. If verses are said to weep tears, then the text itself can be seen to function as an alembic

of sorts: the “litel bok” (v.1786) is capable of extracting private emotions from the interiority of individual readers. Indeed, the activities of reading and writing are both linked to cognition and self-reflection. In the *Roman de la Rose*, for example, Nature relates the acquisition of self-knowledge in human beings to the actual task of writing itself.¹¹³

Still, why does Troilus’s laughter strike us too piercingly with its hardened steel? Indeed, we might say that the steel-like Troilus is distilled too excessively in the poem. As stated by Albertus Magnus, distillation can be used to extract the water from iron to make steel, which is therefore cold, hard, and dry. However, excessive distillation can cause steel to become too brittle. Albertus says, “when it [steel] gets too hard, it breaks and shatters at a blow, because it is too much dried out.”¹¹⁴ Does Troilus here resemble fired steel that has been dried out beyond measure? Like steel made too brittle, Troilus’s laughter cracks at the surface (literally, at the boundary between heaven and earth). To what purpose, then, is the cold and dry laughter of Boethian logic? As is now generally recognized, Troilus’s laughter not only surprises readers with the unexpected, but also provokes an active response to the text. The poem’s resistance to closure and the difficulty of determining meaning might also encourage readers to recall, relive, and rethink the delights of Book 3 from this new perspective of the eighth sphere. A. C. Spearing’s analysis of the poem highlights how “the essence of the work lies in movement, change; and the reader must move through it again and again, realizing it as a shape changing in time, and himself changing with it.”¹¹⁵ But I want to take this a step further. I want to suggest that Chaucer’s focus is human *process* operating here within an alchemical laboratory that is the poem itself. As a textual alembic (“vers, that wepen”), Chaucer’s text functions as a distillation apparatus for extracting refined tears of private emotion. For Chaucer’s readers and the narrator himself, as we have seen already, the actual *chemical* process of reading and writing can be used to catalyze, and finally distill, those inward reflections buried deep within the human-alembic. Crucially, Chaucer’s readers are made to look inward (*in te*). After all, alchemical transmutation in Chaucer’s narrative parallels the agency and process of a reader’s response to the text, a vessel for the distillation of meaning that also functions to isolate, and thus purify, the private self.

Troilus’s petrified laughter, then, is paradoxically the very thing that signals readers to find themselves in the text. In this way, Troilus’s abrupt laughter, though distancing and callous, nonetheless catalyzes the process of seeking “oneself in oneself” (*se in se quaerere*). Significantly, the poet-narrator and his audience are provoked into experiencing an internal, transformative process themselves. Like the alchemist of the *Franklin’s*

Tale—that is, the philosopher who seeks *real* gold—we are surprised to find that alchemy’s *process*, the distillation of wisdom through lived experience, takes precedence over any exterior, physical, or literal *treuthe*. Paradoxically, the secret of Chaucer’s alchemy is to “lete it [the philosophers’ stone] goon”: this final renunciation of the search for permanence in a physical world of decay is perhaps the first step in the recognition that human bodies in the sublunary world are mere rudderless ships on the elemental sea of constant flux. The body-alembic is inevitably swept away by the rapidly moving process that is Nature’s alchemy. Alchemical love, an unstoppable force, is constantly evolving, but it is also continually “perfecting” the *corpus* and *spiritus* of human beings through the distillation of tears.

We can begin to see the potential value of alchemical practice: the exercise of distilling the body’s matter and the mind is both purgative and instructive, bringing one closer to oneself and to God. Does Chaucer, then, connect alchemy’s secrets and Nature’s mysteries to Christian revelation? In the conclusion to the *Canon’s Yeoman’s Tale*, the Yeoman redeems pagan science with the knowledge of the Christian God as our Great Alchemist. In the *Troilus*, we encounter a “God, that auctour is of kynde” (III.1765). Perhaps, then, the Great Alchemist is “God, maker of kynde” (III.1437). Nature’s alchemical processes would belong “To thilke God that after his ymage / Yow made” (v.1839–40). Beneath the dramatic surface of the *Troilus*, the ending’s allusion to the sublimed “mercurie” perhaps teaches us to look beyond the limited perspective that we use to make sense of the mutable realm. More precisely, Chaucer’s readers might have obtained the much sought-after wisdom of Christian alchemists—the knowledge of divine love, which is, metaphorically, the unchanging philosophers’ stone. Indeed, Christ enacts the ultimate transmutation that saves mankind. That said, in the final pages of this chapter, we will observe how Nature’s alchemy operates in the poem irrespective of Christian consolations.



We have seen how a network of alchemical imagery guides Chaucer’s whole narrative project in *Troilus and Criseyde*. This richly complex imagery and alchemy’s processes (for instance, distillation, calcination, and sublimation) enhance the ending’s philosophical treatment of the mutable, terrestrial objects contained within the sublunary place of change. While the narrator’s dramatic personages of history are bound by the actions of Fate, Chaucer’s treatment of Fortune and future contingents, though important, is not the whole picture here. Fortune is explicitly “comune /

To everi manere wight in som degree" (i.843–4), but implicitly, Troy's inhabitants are more firmly circumscribed by the limited possibilities for chemical combination—that is to say, all material change is invariably dictated by the chemical action between four elemental qualities. Beginning in Book 4, we begin to see love's alchemy as a fundamentally reversible process. After the narrator's alchemical interjection with the alembic metaphor in Book 4, Pandarus visits Criseyde, who reaffirms her uncle's self-identification as a supreme alchemist of love and desire. Her acknowledgement, though, is not without irony. Although she admits that Pandarus is the "cause" of her initial joy, Criseyde also acknowledges his direct involvement in the sudden transmutation of her joy into woe: "Pandare first of joies mo than two / Was cause causyng unto me, Criseyde, / That now transmewed ben in cruel wo" (iv.828–30). The stanza is original to Chaucer, and the verb "transmewed" is left intentionally vague, but I would like to suggest that it carries an alchemical connotation.

However, Pandarus's alchemical manipulations are themselves usurped by Nature, a higher power. While "Fortune" in the *Troilus* guides our understanding of change, it is, nonetheless, only *one* aspect of change. In fact, Troilus curses not Fortune but Nature, for "Nature / Shop me to ben a lyves creature!" (iv.251–2). When Troilus later curses the forces of "fate," he also includes "nature, / And, save his lady, every creature" (v.209–10). Troilus finds Fortune to be "unkynde" (iv.266) and thus a perversion of Nature. By contrast, Criseyde suggests that Fortune's wheel, which changes from "joies" to "cruel wo," follows the motions of alchemical transmutation in the natural world. Imputing blame to both Fortune *and* Nature might reflect two varying perceptions of alchemy simultaneously at work: one view is that Nature's alchemy is true, inevitable, and mechanically determined, whereas the other envisages a process lacking any sense or clear purpose (i.e., there are no identifiable "causes" to be found).

In the context of Nature's alchemy, I return briefly to the joys of Book 3. Chaucer uses the alchemical metaphor of spring to capture Troilus's internal movement from woe into joy, the richly complicated "transmutations" of human emotion. Specifically, the familiar metaphor of May, the oncoming of spring, captures in small the "truth status" of human emotion in the context of alchemical rebirth and renewal in poetic discourse:

But right so as thise holtes and thise hayis,
That han in wynter dede ben and dreye,
Revesten hem in grene whan that May is,

Whan every lusty liketh best to pleye;
 Right in that selve wise, soth to seye,
 Wax sodeynliche his herte ful of joie,
 That gladder was ther nevere man in Troie.

(*Troilus and Criseyde*, III.351–7)

This sotted preest, who was gladder than he?
 Was nevere brid gladder agayn the day,
 Ne nyghtyngale, in the sesoun of May,
 Was nevere noon that luste bet to synge;
 Ne lady lustier in carolynges,
 Or for to speke of love and wommanhede,
 Ne knyght in armes to doon an hardy dede,
 To stonden in grace of his lady deere,
 Than hadde this preest this soory craft to leere.

(*Canon's Yeoman's Tale*, VIII.1341–9)

Where we might expect conventional stanzas on the arrival of spring, a crucial element of the medieval iconographic tradition, there are poetic allusions to alchemy's transmutations in Nature. In the Deiphebus episode of the *Troilus*, our eponymous hero abandons his hosts and their guests in order to lie bedridden upstairs by cause of a sudden, feigned fever. In a private moment of secrecy, Pandarus comforts the lovesick Troilus with a promise: “Thow woost ek what thi lady graunted the, / And day is set the chartres up to make” (III.339–40). At this moment, Troilus experiences a self-transformation in which “His olde wo, that made his herte swelte, / Gan tho for joie wasten and tomelte” (347–8). The narrator uses clichés of the onset of May, when “every lusty liketh best to pleye” to describe Troilus's outburst of joy. Troilus—“gladder was ther nevere man in Troie”—revels in the prospect of attaining his Lady, which now appears more clearly in sight. Similarly, the Yeoman of the *Canon's Yeoman's Tale* employs this same trope to describe the joys of the duped priest: “who was gladder than he?” In this parallel scene, uncontrollable joy is likened to the instinctual “lust” of Nature's specimen in recognizing the new “sesoun of May.” The metaphor is commonplace in medieval poetry, but Chaucer, most significantly, presents this coming of spring in terms of alchemy's process of renewal. Paul B. Taylor has identified a metaphor that he calls the “alchemy of Spring”: in the opening of the *General Prologue*, the terms *Zephirus* and *licour* point to Nature's “increase of matter” by chemical distillation.¹¹⁶ By way of example, the pseudonymous author of the fourteenth-century *Aurora consurgens* provides an explanation for the title of his alchemical treatise in terms of

the Sun's workings on the natural world: "the dawn is called the end of the night and the beginning of the day, or the mother of the sun, and so our dawn at its greatest redness is the end of all darkness and the putting to flight of night, of that long-drawn-out winter."¹¹⁷ In the *Troilus* passage, Phoebus melts the snow of the "wynter" in the same way the woe lodged in Troilus's swollen heart begins to "wasten and tomelte." Later, Pandarus again visits Troilus, who "Gan as the snow ayeyn the sonne melte" (iv.367): Nature's transmutations of winter into spring mirror his interior transformation of woe into joy.¹¹⁸ Of course, Chaucer's descriptions of joy in the *Troilus* and the *Canon's Yeoman's Tale* direct our attention, once again, to the curious intersection between the rhetoric of courtly love and the imagery of alchemical renewal.

It is perhaps no coincidence that Chaucer also uses the traditional iconography of Bayard the horse in both the *Troilus* and the *Canon's Yeoman's Tale*. Like "proude Bayard" (i.218), who cannot escape the "long whippe" (i.220) of "horses lawe" (i.223), Troilus is inevitably bridled by the natural law of Love. Likewise, Nature's law applies to the aspiring alchemist hoping to "multiplie":

Ye been as boold as is Bayard the blynde,
 That blondreth forth and peril casteth noon
 He is as boold to renne agayn a stoon
 As for to goon bisides in the weye.
 So faren ye that multiplie, I seye.

(CYT, viii.1413–17)

In both instances, Nature's alchemy reigns supreme and therefore counters any human attempt to circumvent its laws. Troilus will experience alchemy's process of love as Nature commands. Nature's iron fist will also make it impossible for the alchemist to break or wholly manipulate its natural laws for change. What is clear, in any case, is that the recombination of "elementz" plays a cardinal role inside Troy's walls. The transmutation of all matter is the natural law of the land, not excluding our own. The alchemical "body," then, is totalizing and all inclusive. But more specifically, we see how the mysterious, sliding science is what lies behind the destruction of Troy and its "little Troy" (i.e., Troilus). Nature's alchemy quite literally transmutes both Troy and Troilus into alchemical powder. Like Troilus at his alchemical funeral, Calchas predicts that Troy shall be "ybrend, and beten down to grownde" (iv.77). Moreover, the "fire and flaumbe on al the town shal sprede, / And thus shal Troie torne to asshen dede" (iv.118–19). But the alchemical import of this description lies in the fact that "bothe Troilus and Troie town / Shal knotteles thoroughout

hire [Criseyde’s] herte *slide*” (v.768–9, emphasis mine). In short, nothing escapes the transformative powers of this “slydyng science.” However, the ineluctable fall of Troy also prepares us for its resurrection as the Christian Troynovant—that is, Chaucer’s fourteenth-century London. What ought to follow from the ashes (or *calx*) of calcination is the rising of alchemical mercury from the metallic body, analogous to the transcendence of celestial love over natural love. Although the sliding science of alchemy governs Criseyde’s fickle heart, it is also this same penetrating action that allows for the sublimation of Troilus’s soul. This move anticipates the way in which Nature’s alchemy helps redirect Troilus’s thoughts to “the pleyn felicite / That is in hevене above” (v.1818–19). It is arguable that Chaucer reimagines the pagan world in order to better reflect on the natural order without recourse to Christian consolations. In writing the poem, Chaucer is thinking enormously hard about the consequences of Nature’s alchemy on human process: what it might mean, how it works, and how we might feel about it when its pleasures pass away.

However, an allegorical and somewhat Robertsonian reading of the poem, despite its heavy-handed moral didacticism, is one well worth considering. In this context, readers share in the revelation that a higher authority subsumes the science of alchemy with the power to transmute our misguided faith in *cupiditas* into a profound understanding of that stable, divine love. Perhaps, the narrator paradoxically requires a pagan story about the dangers of human love in order to more effectively repudiate it. As we have seen, repeatedly, Troilus distills self-pity via tears throughout the poem, slowly extracting his earthly cares from deep within the alchemical “body.” What is left behind after multiple distillations and extractions is the cold and dry laughter of moral deliberation from his state of beatitude. Troilus relinquishes both his earthly ambitions and excessive love for transient, material things (i.e., Criseyde). Thus, the hero of pagan antiquity supposedly acquires Boethian knowledge concerning a man’s limited perception of the world he inhabits. Like the Yeoman’s unexpected revelation at the conclusion of his tale, frustration regarding the constant merging and breaking away of human interactions and solipsism give way to an elevated perspective on this worldly business. Troilus, too, will “lete it goon.”

Still, this renunciation does not strip the mutual love between Troilus and Criseyde of all meaning. Without our growing fondness for Troy and its most endearing inhabitants, the narrator’s renunciation of the terrestrial world would be both ineffective and meaningless. Chaucer does not reject alchemy’s process of love outright. Rather, medieval readers share in the suffering of proto-Christians who navigate in a labile world of generation and corruption. Even the joyful Pandarus, in Book 4, distills

his own tears of heartfelt sorrow at the moment of seeing Troilus in utter despair. For the first time in the poem, we observe Pandarus losing control of his own bodily nature, and he “ful tendreliche wepte; / Into the derke chambre, as stille as ston” (iv.353–4). Perhaps, this is another instance of the human body behaving as a stillatory, releasing volatile material within the dark, smoky chambers of the alembic. Coincidentally, Pandarus’s law of contraries—that “swetnesse semeth more swete, / That bitternesse assaied was byforn” (III.1219–20)—informs the narrator’s own commentary at the poem’s end. Somewhat along the lines of *felix culpa* (fortunate fault), Christian readers are asked to grapple with a *pagan* story about a mutable and unstable world.

But the moment of Pandarus’s final departure from the poem also problematizes this reading. Pandarus’s law is disturbingly inverted. In its actual, *lived* version, the “bitterness” of Criseyde’s betrayal is made far more abhorrent by the existence of its contrary, the “sweetness” of her former affections toward Troilus. The truth of Criseyde’s variance is so overwhelmingly repugnant that it petrifies her garrulous uncle into a numbing silence. At last, he is silent: “He nought a word ayeyn to hym answerde” and “As stille as ston; a word ne kowde he seye” (v.1725–9). At this point in the narrative, Pandarus, for once, succumbs to a complete and irretrievable loss of words. He is utterly astonished with and terrified by the revelation of Criseyde’s full capacity for variance, which extends even to the extreme case of her giving Troilus’s brooch to Diomedes. Pandarus, the master alchemist, witnesses the alchemical experiment gone awry. In the context of this ending revelation, the final “soth” (v.1724) of Criseyde is both unexpected and wholly unsatisfying. Pandarus certainly gains a new perspective before exiting the narrative. He is confronted with the consequences of his alchemical manipulations and then expresses this new “knowledge” by distilling his final breath in the poem; he voices total hatred for his niece.

Chaucer’s handling of alchemical materials opens up the possibility of two readings: (1) a Christianizing one, which distinguishes between false and true alchemy as it relates to God’s grace and divine love and (2) a natural one about human process, desire, transformation and finally falling away, a process in which perhaps human beings have rather less power over what happens to them than they would like to think.¹¹⁹ In light of Barbara Newman’s recent book on the interaction of the sacred and the secular in medieval literary texts, there is the possibility of a “crossover” relationship between these two readings I present here. Newman articulates a principle of both/and: “when sacred and secular meanings both present themselves in a text, yet cannot be harmoniously reconciled, it is not always necessary to choose between them,” and she also makes a

useful comparison to the *sic et non* principle, such as when “incompatible meanings simply collide—though the *apparent* necessity to choose between them may have been meant as a conscious device to provoke discussion.”¹²⁰ My own view of the *Troilus* is that both “natural” and “Christianizing” readings of the poem are not mutually exclusive but rather dynamic, interactive, and openly engaging. Chaucer incorporates both views of alchemy as discursive systems in order to further his philosophical and moral understanding of human and divine love, and both readings invariably cross at critical points in the narrative.

Despite the assurances of a Christian God, one who guides all of alchemy’s transmutations, we see more clearly the poem’s external validation of Nature’s alchemy, its varying consequences, and the poet’s acute awareness of its deeper mysteries. Chaucer’s characters look for truth when the sublunar world can only provide experiential evidence for constant change. Nature’s alchemy infects everything that claims a space beneath the moon. The tragedy lies in Troilus’s realization that Criseyde, too, is a changeable thing of Nature’s unstable world. It is significant that Criseyde is often described as being “unkynde,” associated with an absence or reversal of Nature. The narrator painfully considers “how Criseyde Troilus forsook— / Or at the leeste, how that she was *unkynde*” (iv.15–16, emphasis mine). In Book 4, Troilus and Criseyde both separately consider the consequences of the other proving “unkynde” (iv.1440, 1652). In Book 5, Troilus is constantly “Ymagynyng ay that she [Criseyde] was unkynde” (v.1441). His fears are confirmed by the language used in Criseyde’s letter, which reveals “that she / Nas nought so kynde as that hire oughte be” (v.1642–3). However, we come to learn that the poem’s tragedy lies in the painful realization that Criseyde has been *of kynde* from beginning to end. After all, Pandarus, who speaks to Troilus on the prospect of finding a new lover, affirms the wise saw that old affections or “Swich fir, by proces, shal *of kynde* colde . . . seur as day comth after nyght” (iv.418–21, emphasis mine). Following the logic of natural law, it is not unexpected that Criseyde will forget Troilus and love Diomedes in his stead. In tragic irony, Criseyde’s betrayal is shown to be wholly and in every way *of kynde*. As early as Book 1, the narrator informs us that Nature’s laws will be unconditionally upheld, “For may no man fordon the lawe of kynde” (i.238). Criseyde, too, is a product of natural law. But what is more interesting is the fact that Criseyde identifies *herself* as Nature’s own creature. Criseyde acknowledges her position as one of many diverse life forms inextricably bound by natural laws of survival:

How sholde a fishsh withouten water dure?
 What is Criseyde worth, from Troilus?

How sholde a plaunte or lyves creature
 Lyve withouten his kynde noriture?
 For which ful ofte a by-word here I seye,
 That "rooteles moot grene soone deye."

(iv.765–70)

Ironically, Criseyde's search for "kynde noriture" (i.e., her need for security and protection) necessitates her love for Diomedes. She merely replaces one fishpond for another, and the "lawe of kynde" is upheld according to her impossibility topos. Interestingly, a similar declaration in Book 3—"And every roche out of his place sterte, / Er Troilus oute of Criseydes herte" (III.1497–8)—recalls another natural impossibility, the removal of black rocks in the *Franklin's Tale* (see chapter 3). But to what purpose do we kneel to these natural laws? Nature can only guarantee that "al nys but a faire, / This world that passeth soone as floures faire" (v.1840–1). According to the alchemy of spring, all things belonging to Nature (its flowers, as well as its human creatures gathering at a fair) are made to transmute throughout their coming and ceasing to be. This is the marketplace of changing element-forms, which trade and are traded in a rapid process of chemical combination. But as Charles Muscatine says so eloquently, "Were the world not fair, it would not have its deep and tragic attractiveness; were it not mutable and passing, it would not be the world."¹²¹ The "tragic attractiveness" of Troilus's "passion" (from the Latin *patior*, "to suffer") is exactly that which makes him a human creature in this mutable world. Indeed, Troilus instinctively and prophetically warns Pandarus, "Thow moost me first transmewen in a ston, / And reve me my passiones alle, / Er thow so lightly do my wo to falle" (iv.467–9). Precisely so, Troilus is transmuted into a cold and dry stone when he arrives at the eighth sphere, and he is finally released from all his passions.

According to Boethius, chemical combination provides the basis for medieval complexion theory. Related to the chemistry of elemental bodies that determine specific humors in the human body, a chemical balance also operates in the mind:

But lat us graunten, I pose, that som man may wel demen or knowen the good folk and the badde; may he thanne knowen and seen thilke innereste atempraunce of corages as it hath ben wont to ben seyde of bodyes? (*As who seith, may a man speken and determinen of atempraunce in corages, as men were wont to demen or speken of complexions and atempraunces of bodies?*). (iv.pr6.190)

The mixture or *atempraunce* of elemental qualities govern the balance "of complexions" and provide a chemical basis for human psychology, the

“innereste atempraunce of corages.” Needless to say, the sliding action of Criseyde’s “corage” is almost synonymous with Boethius’s “atempraunce of corages.” But as we learn from Boethius a few lines later, man’s deeper, *innereste* mixing of *corages* is fully revealed only to “God, that al knoweth.” So, too, is the opaqueness of Criseyde’s *corage* in Chaucer’s poem. Only Griselda of the *Clerk’s Tale*, in many respects the anti-Criseyde, truly maintains an unchanging *corage*:

He waiteth if by word or contenance
 That she to hym was changed of corage,
 But nevere koude he fynde variance.
 She was ay oon in herte and in visage.

(CT, iv.708–11)

But in both worlds of Troy and Troynovant, Nature’s alchemy is a catalyst for the inner mutations of the mind—the “innereste atempraunce of corages”—and its exercise of the will.

The fact that human love is *alchemical* means that the process of love does not come to an immediate halt. Nor does this moment put an end to the transformative process of Troilus’s character, observable in his new perspective from the eighth sphere. For Dante, natural love (*amore naturale*), as opposed to elective love (*amore d’animo*), is “the desire each creature has for its own perfection.”¹²² So, too, does Nature tend to the metallic body of Troilus on its journey to perfection: in the end, all ignoble metals inevitably transmute into the noble, divine Mercury. Alchemical love, then, follows a similar trajectory. It allows Troilus to move and be moved, even to the depths of his inner being. This holds equally true for Criseyde, who is driven by alchemical love to experience the distillation of internal thought:

And set hire doun as styлле as any ston,
 And every word gan *up and down* to wynde
 That he had seyde, as it com hire to mynde,
 And *wex* somdel astoned in hire thought

 And gan to caste and rollen *up and down*
Withinne hire thought...

(II.600–3, 659–60, my italics)

This repeated cycle of “up and down” motion is hermetically sealed within the human alembic and denotes the ongoing distillation of volatile material. Like the alchemist’s stone, Criseyde’s body is fixed and motionless,

but this posture nonetheless catalyzes the *distillation* of pure thought. Moreover, the poem's repetitions of bodily distillations consistently act as a signpost for a character's internal motion and his or her progress toward a fully realized transformation. Like the weeping Trojans who distill tears at the funeral, the human body of Criseyde also wastes away. In her own uniquely Criseydean mode of distillation—passive and elusive—she, too, undertakes an alchemical process of bodily self-corruption and cognitive self-refinement, whatever shape or form that may be. At the very least, Criseyde partakes in a natural process that is common to *all* creatures distilling tears.

The alchemical process makes us alive to the growth and development of Troilus's internal being, which has been set in motion since the poem's beginning:

Dede were his japes and his cruelte,
His heighe port and his manere estraunge,
And ecch of tho gan for a vertu change.

(i.1083–5)

It is precisely this internal “change” of character that makes the mercurial transmutation of Troilus possible. Following his physical union with Criseyde, Troilus tells Pandarus: “I not myself naught wisly what it is, / But now I feele a newe qualitee—/ Yee, al another than I dide er this” (iii.1653–5). From this chemical combination emerges a higher form, “a newe qualitee” or by-product, resultant from the multiple transmutations of his subjective, interior self. Troilus's inner self is so profoundly transformed by alchemy's process that he is proved incapable of unloving Criseyde, even when he has finally acknowledged that she has betrayed him (v.1695–8). Despite Criseyde's sliding of “corage,” Troilus nonetheless adheres to that “moral vertue, grounded upon trouthe” (iv.1672), even to the very bitter end. The curve of Troilus's lived experience is his search for the One in the confused disorder of shifting element-forms. This intense desire to put all faith and obedience in a non-material, universal truth inevitably leads him to the higher knowledge of what lies behind Nature and her incessant transmutations. The poet-narrator, too, extracts a drop of refined wisdom (or *licour*) from the inner life of Troilus.

PART III

LOGIC

CHAPTER 5

COUNTERFACTUAL CONDITIONALS IN THE AVIAN DEBATE: *ARS OBLIGATORIA* AND POSSIBLE WORLDS SEMANTICS IN THE *PARLIAMENT OF FOWLS*

Whether that Goddes worthy forwityng
Streyneth me nedely for to doon a thyng—
“Nedely” clepe I symple necessitee—
Or elles, if free choys be graunted me
To do that same thyng, or do it noght,
Though God forwoot it er that I was wroght;
Or if his wityng streyneth never a deel
But by necessitee condicioneel.

(*Nun's Priest Tale*, vii.3243–50)

In the *Nun's Priest Tale*, Chaucer defers to “the hooly doctour Augustyn, / Or Boece, or the Bisshop Bradwardyn” (vii.3232–3) for a detailed discussion on the topic of God’s foreknowledge. After this apparent dismissal of material that he cannot sift to the husks (*NPT*, vii.3238), the poet nonetheless finds it here necessary to pause for a moment to distinguish between “symple necessitee,” “free choys,” and “necessitee condicioneel.” Interestingly, Chaucer recasts the “greet disputisoun” as it relates to modal logic (*NPT*, vii.3238). In the poet’s own version of simple necessity, he isolates the modal adverb “Nedely,” which qualifies the copula “to doon” in the kind of modal construction “*A* is necessarily *B*” (as opposed to non-modal propositions that exclude such words as “necessarily” and “possibly”). Moreover, the far more complicated conditional necessity reads, “If *A*, then necessarily *B*.” Boethius employs conditional necessity for the argument that God’s knowledge of future

events does not bridle man's free choice.¹ In this chapter, I will examine these and other such modal statements in another poem, the *Parliament of Fowls*. In fact, conditional "if...then..." statements and imaginative conjectures embedded in the oft-repeated word "wolde" permeate the poem's dialogue and draw attention to the poetic *potential* for actualizing the possible within the reality of the inner dream.

While Chaucer combines the light-hearted themes of a *demande d'amour* with the mock-seriousness of parliamentary debate, a more formal structure underlies these surface elements. The avian debate is meant to be the poem's main concern, as Chaucer himself refers to his work in the *Retractions* as "the book of Seint Valentynes day of the Parlement of Briddes" (1085). It has also been suggested that "some of the birds speak as though taking part in a clerkly disputation."² In the tradition of medieval debate poetry, Alastair Minnis believes Chaucer's *Parliament* reflects a kind of scholastic *quaestio* and the *sic et non* method while remaining open-ended and inconclusive, in keeping with the demands of the poetic genre.³ He adds, "This scholastic mode of thinking is, in my view, more important for the structure and strategy of the *Parliament* than that associated with the *demande d'amour* tradition."⁴ Modern critics seem more willing to interpret the parliamentary debate in terms of formal *academic* disputation (*disputatio*), which would suggest a poem following a scholastic method not only organized according to formal principles, but also embarking upon a philosophical project. Indeed, Nicolette Zeeman has pinpointed a "recognizable tradition of 'literary' and sceptical philosophizing." She adds, "while it may be that the non-analytic modes of this poetical sceptical tradition have made it hard for modern historians of medieval philosophy to recognize it as a central component in the medieval philosophical inheritance, I suggest that its import may not have been lost on medieval readers."⁵

An interesting point of context and comparison are the attempts of fourteenth-century English schoolmen to formalize logical *possibilities* with meticulous rigor. John Duns Scotus, while lecturing at Cambridge and Oxford from 1298 to 1308, introduced what is known as the *ars obligatoria*, a disputational technique used to investigate the coherence of counterfactual possibilities.⁶ The language and structure of *ars obligatoria* led to the development of the famous obligational disputations of the fourteenth century.⁷ This predominately English invention was a product of various treatises entitled *De obligationibus*. According to Jennifer E. Ashworth, the obligational disputations "were also valuable for scientists because they provided a model for the full exploration of hypothetical situations, or reasoning *per imaginationem*."⁸ In this chapter, I will

argue that Chaucer's university-trained audience would have read the *Parliament of Fowls* as a mock obligational debate—a formal academic examination of imagined possibilities within the rigid structure of a debate. These so-called *obligationes* were an essential part of the university curriculum as exercises in logic and were practiced by virtually all university students. Thus, it would be overly cautious to attribute ignorance to Chaucer concerning the existence of these well-known and widely practiced *obligationes*. While there are at least dozens of books and articles on the influence of Ockham's nominalism in Chaucer's poetry—which I believe still remains highly doubtful—there is far more evidence to suggest that Chaucer had some knowledge of, or at least an awareness, of the fourteenth-century obligational debates. Moreover, it is highly significant that Chaucer's close friend Ralph Strode composed a widely used textbook on the rules and principles pertaining to obligations logic. Strode was in fact famously known in fourteenth-century Italy for his influential work on obligational disputations (at least eleven Italian manuscripts still survive).⁹ In the *Parliament*, the disputation among the birds assembled before Nature closely resembles the language and structure of the fourteenth-century *obligationes*. Furthermore, it was not uncommon to discuss marriage proposals and the legal contracts of marriage in terms of disputational obligation.

Howard H. Schless has compared the narrator's paralysis before the park's entrance and his predicament of the will to the philosophical dilemma known as Buridan's Ass: a donkey, unable to decide between two identical bales of hay, dies of starvation.¹⁰ Kathryn Lynch refines Schless's observation in the context of the psychology of the will, and she speaks of the poem's voluntaristic elements—that is, the late medieval emphasis on the liberty of the will—pitted against the deterministic forces that underlie rational choice and intellectualism. Lynch mentions Scotus's distinction between “the intellect as a natural faculty and the will as a free one”¹¹ but does not relate Scotus's teachings to the possible worlds semantics that I discuss here: I do not suggest that the movement of the will is irrelevant to the poem's meaning, but it is also important to note, as Simo Knuutilla argues, that “a satisfactory account of the freedom of the will presupposes a different concept of possibility,” which Scotus calls logical potency (*potentia logica*) or logical possibility (*possibilitas logica*).¹²

Throughout the *Parliament of Fowls*, Chaucer shows an interest in the new technology of modal logic, and he draws special attention to the fourteenth-century version of possible worlds semantics, which flourished in the poet's lifetime as part of the new science of modal theory. At first glance, the formel is expected to choose a male eagle as her

mate, but the main concern of the debate oddly shifts from the straightforward “whom will the royal tercel choose?” to the more open-ended and layered “what if . . . ?” question. More importantly, the multitude of “what if . . .” scenarios conjectured throughout the debate (e.g., what will happen if the formel rejects or accepts a male suitor) are, in fact, never actualized in the poem, as the formel unexpectedly *refuses* to pick a mate. Like the obligational debates of the fourteenth century, the poem concludes without the expected transition from the potential (her possible suitors) to the actual (her choice of a mate). In other words, the poet is probing the ontology of simultaneous possibilities before imagined alternatives are indeed actualized in the real world of decision making.

The idea of modality—of obligational debate as well as of compossibility sets—motivates the poem. While deliberately employing modal terms and modal structures—which, I believe, is not merely a fortuitous borrowing from obligations literature—Chaucer consciously probes the ontology of counterfactual conditionals as part of his poetic effort to validate what one critic calls “a pluralistic vision of reality.”¹³ In the end, Chaucer applies the fourteenth-century equivalent of possible worlds semantics to each successive layer of the dream. As Nature is the embodiment of the medieval principle of plentitude—that is, the general idea that no possibilities that remain possible for eternity will go unrealized¹⁴—it not surprising that she instigates an obligational exchange for considering possible mates with possible outcomes. The dream, I will argue, then becomes a dream of possibility, which hinges on Nature’s counterfactual “condicioun” (407) at the beginning of the debate: the disputation *de obligationibus* that follows suggests Chaucer’s interest in the coherence of counterfactual reasoning and the *logica possibilitas* of courtly debate. Moreover, the *obligationes* of the fowls not only explores various alternate histories (i.e., the possible outcomes for the formel’s suitors)¹⁵ but also considers the potential for mutually compossible or *impossible possible* worlds.

The poem’s endemic fissures are made known with the fourteenth-century paradigm of modality as alternativeness.¹⁶ The possible is no longer a provisional category but instead maintains an independent ontological status: its relevance does not at all depend on either the faculty of the intellect nor the psychology of the will. Simo Knuuttila compares fourteenth-century innovations in modal logic to modern notions of possible worlds semantics and summarizes, “The actual world is possible as it is, and this possibility and the possibilities of unrealized things are primary metaphysical facts which are not dependent on anything else.”¹⁷ Medieval theories of modality are no less pertinent to the

action of Chaucer's poem, a poetic thought experiment wherein virtually all of Chaucer's characters consciously examine various possible states of affairs: the plenitude of possibility crammed into a 699-line poem certainly has the same effect as the narrator's feeling that "So ful was that unethe was there space / For me to stonde, so ful was al the place" (314–15). Bennett's authoritative study nearly anticipates this thesis and unobtrusively suggests, "The poem reflects the great debate of the age between the philosophy of plenitude and the philosophy of other-worldliness. Elsewhere this debate is carried on by learned clerks in the Latin of the Schools; Chaucer . . . ventures as a layman to discuss these themes in the vulgar tongue."¹⁸ In the dream, love's extremes of antinomy and contradiction are then swallowed up by the pluralism of possibility.

Cosmogonic Theory and Simultaneous Alternatives in Chaucer's *Locus Amoenus*

Beginning in late antiquity, Augustine argued that before creation, God surveyed simultaneous alternatives for his providential plan and then exercised his free choice, picking one possible world for the actual world. Augustine emphasized that "the world was not necessary and that many possibilities remained unrealized . . . that what is actual is temporally necessary at a certain point of time as no longer avoidable . . . unrealized alternatives are possible at the same time in the sense that they could have happened at that time."¹⁹ This idea of modality as simultaneous alternativeness (compossibility sets) puts emphasis on the fact that the actual world is one of *many* alternate possible worlds. Needless to say, this Augustinian view influenced medieval theologians writing about divine creation. By way of example, Robert Grosseteste clarified that possibilities that are definitively not actualized remain possible "in the sense that they could have been included in God's eternal providential choice."²⁰ That is to say, the actual world is simply one of the many divine alternatives. Crucially, Augustine's doctrine of creation anticipated a Scotist model that shaped fourteenth-century theories of modality. Late medieval philosophers grappled with the Aristotelian thesis that at any given temporal instant, "everything necessarily is when it is." This principle—"the necessity of the present"—does not allow the will to consider simultaneous alternatives in a single instant of time, but instead "fixes" the instantaneous present: a man will *possibly* be sitting or standing at time t_1 , but he cannot possibly be *both* standing *and* sitting at one point in time, so at the present "now" of t_1 he *necessarily* is standing or sitting. In fact, Troilus's soliloquy in Book 4 of *Troilus and Criseyde* includes this

commonplace example of the man standing or sitting in order to make sense of predestination:

For if ther sitte a man yond on a see
 Than by necessite bihoveth it
 That, certes, thyn opynyoun sooth be
 That wenest or coniectest that he sit.
 And further over now ayeynward yit,
 Lo, right so is it of the part contrarie,
 As thus—now herkne, for I wol nat tarie:

I sey that if the opynyoun of the
 Be soth, for that he sitte, than sey I this:
 That he mot sitten by necessite;
 And thus necessite in eyther is.
 For in hym, nede of sittynge is, ywys,
 And in the, nede of soth; and thus, forsothe,
 There mot necessite ben in yow bothe.

But thow mayst seyn, the man sit nat therfore
 That thyn opynyoun of his sittynge soth is,
 But rather, for the man sit ther byfore,
 Therfore is thyn opynyoun soth, ywis.
 And I seye, though the cause of soth of this
 Comth of his sittynge, yet necessite
 Is entrechaunged, both in hym and the.

(*Tr.*, iv.1023–43)

Troilus's speech on the "necessity of the present" closely follows its source in the *Consolatio* (Book 5, *prosa* 3), but Troilus breaks off at the point where Boethius is about to defend the notion of free will. As we shall see later on, the example of "A seated man can walk" was also used in treatises in modal logic to discuss the fallacy of composition and division. Scotus, however, rejects Aristotle's so-called necessity of the present, and as Calvin Normore has shown, this initiated a significant shift in modal theory, bolstering the idea of simultaneous alternatives.²¹ Indeed, Scotus goes even further than Augustine, arguing that God surveys all the possible worlds in a single instant—all the possible worlds are laid out before him, so to speak—and in an all-present act of willing, he chooses to actualize one of these possible worlds. For Scotus, a possible world is an entity in itself, which does not depend upon the existence of God nor the actual world; more importantly, "it was not Leibniz who invented the idea of possible worlds;

the idea is presented in Duns Scotus' modal theory, and this new view of modal notions constitutes the general basis of fourteenth-century modal logic."²²

For the poet, the dream itself provides a template for the exploration of possible worlds (or other-worlds):

The wery huntere, slepyng in his bed,
 To wode ayeyn his mynde goth anon;
 The juge dremeth how his plees been sped;
 The cartere dremeth how his cart is gon;
 The riche, of gold; the knyght fyght with his fon;
 The syke met he drynketh of the tonne;
 The lovee met he hath his lady wonne.

(99–105)

It is the possible world of “the lovee [that] met he hath his lady wonne” which preoccupies the latter half of the poem. First, it is worth noting that the narrator's summary of the *Somnium scipionis* also hints at the medieval notion of actual and possible worlds. Scipio's emphasis on the requirements of *this* world is particularly relevant to our discussion. Scipio draws special attention to “oure present worldes lyves space” (53) as an actual world incorporated into a larger scheme of alternate possible worlds, though not all simultaneously present. Affrycan shows Scipio “the lytel erthe that here is” (57) and repeats his emphasis on *this* world: men experience harmony “in this world here” (63), but at some point destruction will come “That in *this world* is don of al mankynde” (70, emphasis mine). The medieval version of *contemptus mundi* diminishes the importance of present actuality and, by implication, the possibility for “harde grace” in the *next* possible world bears more weight for the Christian soul. More important, Affrycan stresses how “many a world be passed, out of drede” (81). The cyclical pattern of the Great Year brings about destruction of present civilizations, and the return of the heavenly bodies to their starting points then produces *another* possible world. As Kathleen Hewlitt argues, the “otherworldly *Dream of Scipio* serves as the paradoxical point of departure for the poem's subsequent dream examination of alternative love paradises.”²³ Scipio's notion of recurring alternations between “many a world” steadily undercuts any false appearance of actuality, and instead, shifts our attention toward the pluralism of possibility.

The poet introduces the main idea of possible worlds more directly with the narrator's predicament before the *locus amoenus*. The narrator

stands fixed between two opposite inscriptions “On eyther half, of ful gret difference” (125):

“Thorgh me men gon into that blysfyl place
Of hertes hele and dedly woundes cure;
Thorgh me men gon unto the welle of grace,
There grene and lusty May shal evere endure.
This is the wey to al good aventure.
Be glad, thow redere, and thy sorwe of-caste;
Al open am I—passe in, and sped thee faste!”

“Thorgh me men gon,” than spak that other side,
“Unto the mortal strokes of the spere
Of which Disdayn and Daunger is the gyde,
Ther nevere tre shal fruyt ne leves bere.
This strem yow ledeth to the sorweful were
There as the fish in prysoun is al drye;
Th’eschewing is only the remedye!”

These vers of gold and blak iwriten were,
Of whiche I gan astoned to beholde.
For with that oon encresede ay my fere
And with that other gan myn herte bolde;
That oon me hette, that other dide me colde;
No wit hadde I, for errour, for to chese
To entre or flen, or me to save or lese.

(127–47)

It is not surprising that Bennett here interprets the walled park as civilization itself, and Derek Brewer believes that the garden “stands for the whole created world.”²⁴ Similarly, Piero Boitani suggests that “as the dreamer’s view penetrates deeper into the garden . . . we enter the human cosmos, an artificial world where myth and courtesy—civilization as distinct from nature—are in full bloom.”²⁵ Moreover, Robert R. Edwards hints at the notion of the *locus* as a miniature model of the universe.²⁶ The design for one possible world (or civilization) consists of “grene and lusty May [that] shal evere endure.” The modal alternative, however, dictates that “nevere tre shal fruyt ne leves bere.” Following these types of contradictory premises, the entire *descriptio* of the garden enclosed presents a universe with its plentitude of possibilities, and the literal and figurative boundaries that contain these possibilities are signposted on the gate, which Wolfgang Clemen suggests are “the possibilities inherent in love itself.”²⁷

Chaucer here experiments with the medieval notion of synchronic alternativeness, the main idea of fourteenth-century theories of modality. In one sense, the narrator is standing before the entrance to a possible world that will indeed become actual with real experience once inside the garden. In comic irony, the narrator is compared to the Christian “God, that makere is of al and lord” (199): He coterminously surveys possible worlds for his providential plan before he makes one actual. That is to say, the possible worlds signposted before the park’s entrance are mutually compossible as opposites that exist coterminously in the divine and human will. God, adhering to the Scotist principle of *possibilitas logica*, freely “chooses among the various possible compossibilities and enacts one of them, making some possible world the actual world” in a single moment or “instant of nature.”²⁸ The narrator reads inscriptions that signify the possible worlds of the garden. However, he nonetheless is puzzled by the impossibility of antinomies inhering in the same entity, the garden enclosed.

First, it is clear that the “vers iwriten” (124) are meant to be read as *propositional* statements, and the propositions “with lettres large iwroughte” (123) signify by supposition the actual (or possible) contents within the *locus amoenus*. In the scene before Nature’s park, Chaucer draws special attention to the words themselves—that is, the inscriptions “with lettres large iwroughte” (123); “vers iwriten” (124); “these vers of gold and black iwriten were” (141); “this wrytyng” (158). The narrator’s predicament relates to the problem of supposition and ampliation in semantic theory, or what is “ment” (158) by “the pleyn sentence” (126). The narrator confronts the impossibility problem, which is expressed in one of the most often-quoted medieval propositions: the simple phrase “a white thing is black.” The phrase is often nested in this general formula:

What is possible will be true
 A black thing can be white
 Thus it will be true that a black thing is white.²⁹

This standard *insolubilia* dealt with ampliation and the truth-conditions of a proposition, and it appears in virtually every influential treatise on logic, such as in the works of Albert of Saxony, Walter Burley, William of Ockham, William of Sherwood, Peter of Spain, Lambert of Auxerre, and John Buridan. More importantly, the philosophical discussions involving the phrase closely resemble Chaucer’s description of the impossible “vers of gold and blak.” To put it another way, Chaucer’s *locus amoenus* expresses the same antinomy in that a gold thing can be black.

According to Ockham and others, every future proposition has two possible meanings, which may be true or false (*Summa logicae*, 2.7). The ampliative function of a proposition is key to understanding antinomy. Ampliation allowed for the subject of a proposition to extend over past and future time. It has also been argued by medieval logicians that it allowed for a term to have reference to non-existent (and sometimes impossible) objects imagined in the mind.³⁰ For simplicity, let us consider the famous medieval proposition “an old man will be a boy.” It is, in fact, understood to be true in that a person not yet born will be an old man at some point, and the same person will be a boy before he is old. In the Prologue to the *Clerk's Tale*, Harry Bailey unwittingly remarks on the importance of ampliation in solving sophisms:

I trowe ye studie som sophyme;
But Salomon seith “every thyng hath *tyme*.”

(iv.5–6, emphasis mine)

Contradictory propositions, when separated in time (*in sensu diviso*), are not contradictory. More to the point, the truth-condition of “a gold thing is black” is resolved if the modal proposition is understood *in sensu diviso* (with division). In this case, the adverbial construal of the mode interprets the modal proposition *de re* (about a “thing,” as opposed to the conjoined meaning *de dicto*, a “that” clause). That is to say, the modal term can divide the proposition into two parts, having an effect on the truth conditions on one part only, as opposed to treating the sentence *in sensu composito* (with composition). The *composito/diviso* distinction derives from Aristotle's *Sophistici elenchi*, and it became a commonplace in textbooks on logic throughout the Middle Ages.³¹ In this way, Ockham's understanding of the divided sense makes “a white thing can be black” true because there is something for which ‘white’ stands, and ‘This is black’ is possible where ‘this’ indicates something for which ‘white’ stands,” whereas “a white thing is black” is impossible.³² Similarly, the example of “A seated man can walk,” which appears in the *Troilus and Criseyde* passage I quoted earlier, can also be interpreted according to either sense. The general meaning *de dicto* is “That-a-seated-man-walk (i.e., while seated) is possible,” whereas we can also read the proposition *de re*, “A seated man has the power or ability to walk.” Of course, the statement is true or false depending on what sense is being used for reading the sentence.³³

Chaucer's gate here functions as a disjunctive modal operator that divides the two verse propositions into “eyther half”: the gate as copula (or modal operator) literally makes a physical division. These propositions are then to

be understood *in sensu diviso*, which is supposed to signal a temporal distinction between the two predicates. More important, the narrator mistakenly interprets the propositions strictly in the composite sense—"a supposed actualization of predicates at the same time"³⁴—which merits a logical impossibility. Although the garden's propositional premises (the two verses) are *individually* possible, they are both *mutually* impossible, which would result in a straightforward contradiction. The possible worlds of the garden, represented by each verse inscription, remain in the domain of *potentia*: that is, a gold thing *can* be black. The propositions are therefore ampliative; the signification of the divided premises is temporally extended into future time. When the narrator walks into the garden, his experience is separated into temporal units: a certain thing in the garden is (or was) gold and is now black.

The actual world is interwoven into the dreamer's possible world, or as Bennett claims, "These trees . . . are seen to belong to and be reminders of the world of actuality . . . certain it is that with Cupid we return to the human world."³⁵ As oneiric concepts in the mind, the hill of flowers is mutually compossible with the bare hill of sand. However, the two are both impossible as far as the narrator can only visit one location at one point in time. Finally, the medieval compossibility problem relates to fourteenth-century "obligational disputations." Chaucer constructs a brilliant thought experiment in the form of debate *de obligationibus* in Nature's park, thus pushing the limits of compossibility with counterfactual conditionals and the notion of simultaneous alternatives.

Ars Obligatoria

In the fourteenth century, a number of prominent theologians and logicians in England incorporated the disputational technique of *ars obligatoria* into various treatises entitled *De obligationibus*. These works discussed the rules for obligational debates (*obligationes*), a kind of logic exercise that predates the academic thesis defense. Although medievalists and philosophers of logic have studied extensively the dialectical *obligationes*, scholars generally concede that "much of it still remains mysterious."³⁶ While it can be argued that the *obligationes* are loosely based on the disputational principles described in Aristotle's *Topics*,³⁷ the exact purpose of these dialectical disputations is largely unknown, and voluminous writings on the subject by Burley and Ockham suggest the *obligationes* "might have had a more significant theoretical status than mere exercises."³⁸ Paul Vincent Spade first suggested that obligational debates were intended to investigate the nature of counterfactual conditionals or counterpossible reasoning.³⁹ On the other hand, Catarina

Novaes considers the oral disputation as a sophisticated logic game of consistency maintenance or inference recognition,⁴⁰ whereas Henrik Lagerlund and Erik Olsson contend that medieval theories on the *obligationes* constitute theories of belief revision.⁴¹ Christopher Martin and others believe that “the general purpose of the *obligationes* was the evaluation of cotenability between propositions, in a way similar to the construction of possible worlds by means of Lindenbaum’s lemma.”⁴² It has therefore been suggested that the *obligationes* can be described as possible worlds or thought experiments.⁴³

At any rate, this development has its roots in late antiquity: philosophers would deliberately subject an impossible hypothesis to rigorous analysis with the hopes of unveiling certain truths. Medieval logicians adapted this classical strategy with the development of *positio impossibilis*, applying obligations logic to theological problems that are specifically “counterpossible rather than counterfactual.”⁴⁴ Knuuttila cites an example of *positio impossibilis* that entails a person as both man and donkey, an idea “naturally impossible and supernaturally possible since Jesus Christ was a human being and a divine being simultaneously.”⁴⁵ During an obligational exchange, an *opponens* puts forth a *positum*, which is typically a false statement or counterfactual conditional, and the *respondens* is “obligated” to accept this proposition. The *opponens* then states a series of propositions that the *respondens* either accepts, denies, or doubts. While the obligations provide a formal structure for exploring philosophical and theological problems, the underlying purpose involves the exploration of possible states of affairs. The obligational debate is, therefore, likened to a “possible world” in which the initial condition—the first *positum* of the *opponens*—is confirmed as true by the *respondens*. Throughout the duration of the debate, the *respondens* is then “obligated” to maintain consistency in his responses until he arrives at a contradiction.

The *obligationes* flourished in England during the fourteenth century. Virtually all well-known philosophers of the late Middle Ages contributed to the literature surrounding the debates *de obligationibus* (e.g., William of Ockham, Thomas Bradwardine, John Buridan, and Walter Burley).⁴⁶ Additionally, the famous Oxford Calculators at Merton College nearly all wrote treatises on *obligationes*. As I said earlier, Chaucer’s close friend Ralph Strode (to whom Chaucer dedicates his *Troilus and Criseyde*) wrote an important treatise on the *obligationes* in the 1360s, and as Bennett puts forth, “Chaucer may likewise have been stirred by the talk of his ‘philosophical’ Oxford friends like Gaddesden and Strode.”⁴⁷ However, Chaucer’s knowledge of *ars obligatoria* need not depend on his having read obligational treatises nor on his conversations with Strode, as the well-known disputational technique was fully incorporated into the arts

curriculum. Following a span of two centuries after circa 1200, obligational parameters evolved to satisfy variable purposes, notably evinced by the differences in strategy between the traditional rules of Walter Burley's *antiqua responsio* and the later alternative of Roger Swineshead and Richard Kilvington, known as the *nova responsio*.⁴⁸ Although there are different species of *obligationes*, "*positio* is the crown jewel of the *obligationes* regalia."⁴⁹ On the whole, "these treatises came to be a standard, perhaps even an important part of medieval logic."⁵⁰ The obligational disputation constructs a possible world that entails a possible state of affairs; more to the point, the obligations provide a theoretical framework aptly suited to Chaucer, a philosophical poet composing a medieval dream vision of possibility.⁵¹ Without a doubt, Chaucer is drawn to the artificiality of the *obligationes* as a medieval thought experiment.

The avian debate in Chaucer's *Parliament*, I will argue, imitates the obligational disputations of the medieval schoolmen. First, it is highly unusual to incorporate a "condicioun" (407) in traditional debate poetry—that is, Nature's condition that the formel agree to the tercel's election. Bennett confirms, "Nature's condition: 'if that hir leste' (if she be so inclined): a condition, if we may believe the *Knight's Tale*, and other romances, not always considered in such debates, and certainly not always regarded in feudal society."⁵² Significantly, an opening conditional proposition is in fact one of the main characteristics unique to a disputation *de obligationibus*. Chaucer likely only had a cursory knowledge of *obligationes*, but it nonetheless provided an ontological framework for exploring the poem's pervasive counterfactual possibilities and inferences. Critics have drawn attention to the plurality of possibilities considered throughout the avian debate, which indeed all *remain* as unactualized possibilities or, as Minnis sums up, the poem "holds out the possibility of several possible determinations, in the positions taken by various hearers."⁵³ The main idea is that "the formel remains 'neutral' and all three eagles remain 'possible' mates, while for a year the final choice remains 'indeterminate.'"⁵⁴ While Nature "obligates" her creatures to accept her counterfactual conditional—that is, Nature's "condicioun" in line 407—the three tercel eagles and the lower-class birds all challenge the principle of plentitude with the introduction of mutually impossible counterfactual possibilities. Chaucer here cleverly applies medieval theories of modality to the uncertain realm of *fine amor*. Like Jankin's academic solution to Thomas's fart-problem in the *Summoner's Tale*, Chaucer's university-trained audience would find the highly complex debate *de obligationibus* wholly satisfying and downright hilarious. Nevertheless, before we proceed to examine the disputational structure of the *Parliament* in terms of

obligations-logic, it is first necessary to clarify how Nature's *positum* is the debate's counterfactual conditional.

Nature's Counterfactual Conditional as Obligational *Positum*

Counterfactual inferences are repeated throughout the avian debate, and it has been shown that one purpose of the *obligationes* is to explore the nature of counterfactual conditionals.⁵⁵ To clarify, counterfactual conditionals are types of conditional propositions (i.e., "if...then..." statements) that indicate what *would* be the case if the antecedent *were* true. Interestingly, Chaucer's Nature is particularly prone to counterfactuals. For example, she employs a counterfactual conditional when she speaks directly to the formel: "*If I were Resoun, thanne wolde I / Conseyle yow the royal tercel take*" (632–3, my italics). In this case, the antecedent—"If I were Resoun"—is necessarily false, but the consequent is true if the antecedent *were* true. By contrast, "indicative conditionals" signify what is true if the antecedent *is* in fact actually true (i.e., there is a real possibility for it to be true). For example, the royal eagle states an indicative conditional as a pledge of loyalty:

And *if* that I be founde to hyre untrewre,

 I preye to yow this be my jugement:
 That with these foules I be al torent,
 That ilke day that evere she me fynde
 To hir untrewre, or in my gilt unkynde

(428–34, emphasis mine)

The royal eagle's proposition is a direct indicative conditional, which, ironically, makes the threat of disloyalty a *real* possibility (as opposed to a counterpossibility or impossibility). Moreover, the conditional antecedent—"I be founde to hyre untrewre"—verges on the famous liar-paradox, which altogether compromises his truth-conditions. Similarly, the second eagle also asserts an indicative conditional: "I dar ek seyn, *if* she me fynde *fals*, / Unkynde janglerere, or rebel any wyse, / Or jelous, do me hangen by the hals!" (456–8, emphasis mine). Indicative conditionals (as opposed to counterfactual conditionals) are liable here to coincide with actual events within the dream and therefore pose a tangible threat to the formel. Ironically, these indicative conditionals draw special attention to the possibility of faithlessness and undercut the original intention of reassuring the formel with

pledges of loyalty. It is significant that the third eagle consciously omits indicative conditionals from his speech, as though the mere utterance of an indicative conditional permits the antecedent to be true. Rather, the third eagle simply states, “I am hire treweste man” (479) and “trewe in al that herte may bethynke” (483). While the eagles concern themselves with assigning truth-values to specific modal and assertoric propositions, the binary logic of truth and falsity (i.e., “trewe”-“fals” and “treweste”-“untrew”) is nonetheless tenuously supported by the antecedent “false-truth” of Nature’s counterfactual conditional at the beginning of the debate. The subsequent thread of arguments throughout the disputation, we shall find, are therefore all equally counterfactual inferences, precisely the sort we would expect from a fourteenth-century obligational disputation.

The most important counterfactual of the poem occurs at the start of the obligational debate with Nature’s own *positum*:

“And after hym by ordre shul ye chese,
 After youre kynde, everich as yow lyketh,
 And, as youre hap is, shul ye wynne or lese.
 But which of yow that love most entriketh,
 God sende hym hire that sorest for hym syketh!”
 And therwithal the tersel gan she calle,
 And seyde, “My sone, the choys is to the falle.
 But natheles, in this *condicioun*
 Mot be the choys of everich that is heere,
 That she agre to his eleccioun,
 Whoso he be that shulde be hire feere.”

(400–10, my italics)

To begin, it must be said that the poet’s adherence to obligational rules is naturally lighthearted. In the same way that Chaucer is imprecise in his treatment of parliamentary formalities, here too “Chaucer is aiming at *vraisemblance* rather than complete exactitude.”⁵⁶ Nonetheless, it is worth a moment to delve deeper into the ways the poet is consciously aware of introducing modal terms into his vernacular for Nature’s counterfactual conditional (the *positum* of the poem). First, Nature posits in modal terms the particular “*condicioun*” (407) that the formel approve her suitor. Chaucer begins the disputation by utilizing certain modal operators (e.g., “mot be” or “shulde be” for necessarily) in order to direct the reader’s attention to the language of *obligatio*. Here, Chaucer ensures that the modal term of his proposition is predicated. Next, Chaucer uses a “that” clause construction to render the Latin dictum of a proposition (a proposition *simpliciter*), which would require an accusative plus infinitive

construction.⁵⁷ Finally, the *opponens*—namely, Chaucer’s Nature—puts forth a *positum*, which satisfies the obligational requirement for a contingent proposition that is typically a veiled contradiction or natural impossibility.

Obligational disputations always begin with a *positum*. As articulated by Ockham and other commentators on obligations-logic, the purpose of beginning an obligational dispute with a counterfactual or impossible *positum* is to evaluate the truth-value of such propositions, such as “God does not exist,” “The Holy Spirit does not proceed from the Son,” or “Man is not capable of laughter.”⁵⁸ Interestingly, Ockham’s writings on the *obligationes* focus almost exclusively on the requirement that the *positum* must constitute an internal contradiction, and “he maintains that not every impossible proposition can be posited, but only those which do not manifestly or obviously entail a contradiction.”⁵⁹ However, Hester Gelber’s analysis of the obligations literature has shown that medieval logicians (e.g., Ockham and Holcot) chose to focus on *secundum quid* impossibilities, which are “only relatively, not completely, unintelligible or beyond the exercise of reason, or no chain of reasoning could be constructed about them.”⁶⁰ Since absolute impossibilities would allow for anything to follow, philosophers instead placed emphasis on *natural* impossibilities, “those impossible given the natural order but still capable of occurring miraculously or in some differently ordered world.”⁶¹ By focusing on possible *positio*, Gelber refines Simo Knuutila’s observations to explain how “from the perspective of nested modalities, impossible *positio* was subordinate to some greater frame of possibility . . . possible *positio* swallowed up the impossible.”⁶² In other words, possible *positio* can include a counterfactual proposition that does not entail a logical contradiction *per se*.

In the context of “possible” *positio*, Nature’s initial *positum* and “condi-cioun” for pairing—that the formel need “agre to his eleccioun”—is a statement of uncertain truth value, as it relates to a currently unknowable state of affairs. However, the *positum* of the debate is invariably counterfactual because the formel declines to choose a mate at the disputation’s conclusion so that she may have “respit for to avise me” (648). Nature’s conditional antecedent (i.e., the fact that the formel even makes a choice) also remains false if amplified to future time (i.e., next year’s debate). First, there is the question as to whether or not the next debate will even occur in the first place. In fact, David Lawton has suggested that next year’s debate “will be just as abortive as the one we have now overheard.”⁶³ Other critics are equally as skeptical. Deanne Williams speculates that “there is no telling what events might take place in the coming

year that could, in a heartbeat, compromise her value in the marriage marketplace.”⁶⁴

But more importantly, Nature’s introductory stipulations contain both natural and *secundum quid* impossibilities. As Bennett opines, the condition that “the formel must be willing to mate with the one who chooses her” is basically “a condition adequate only until it appears that she is the choice of more than one.”⁶⁵ Similarly, Zeeman notes how “not only are the *tersels* all in love with the same bird, but two of them are bound to be disappointed, and, anyway, it is not clear what the criteria for choosing between them are.” Pointedly, Zeeman recognizes the poem’s “unacknowledged contradiction”: “those of Nature’s creatures who are actually doing her work and reproducing one way or another . . . are the lower-class ones; the more exquisite and aristocratic Nature’s creatures are, the less they do her work or use her ‘parts.’”⁶⁶ It has been shown that the *obligationes* provide a theoretical framework of “meta-logic” for the examination of paradoxes or *sophismata* sentences—that is, medieval logicians valued the “utility of the obligational framework for exposing possible contradictions.”⁶⁷ Chaucer’s presentation of Nature is certainly problematic, as she confusedly “prike[s] with plesaunce” all three of the suitors even when “reason and natural (including social) law suggest that the eagle choose the ‘royal tercel.’”⁶⁸ As a result of this natural and *secundum quid* impossibility, Nature unlocks a closed system and unfairly changes the truth-conditions of her *positum*—that is, the choice of a mate now depends entirely on the formel who “shal han right hym on whom hire herte is set” (627). These truth-conditions are further compromised by Nature’s attempt to exonerate herself: “This juge I, Nature, for I may not lye” (629). This is problematic, as her exact motivations to “juge” for the *second* time are precisely due to the fact that Nature’s false conditions at the debate’s beginning constituted an untruth or fictional circumstance. Moreover, the formel’s refusal to choose a suitor in the temporal present of the debate solidly confirms Nature’s conditional statement as a proven counterfactual.

The *composito/diviso* distinction—a popular analytical tool employed in virtually all logical textbooks of the Middle Ages—is particularly relevant here. It appears that the particular species of Nature’s *positio* is determined by the *positum*, which in this case is a conjoined *positum* with a conditional proposition.⁶⁹ If Nature’s modal proposition is understood in the composite sense, *de dicto* (*in sensu composito*), then Nature’s statement (a nominal construal of the mode) suggests a contradiction—shall we say, “if everyone chooses the formel, then she must agree to every choice, whosoever he may be that should be her mate.” Although the *de dicto*

reading of the conditional is not entirely valid, it nonetheless suggests that in the best of all possible worlds, the formel would indeed agree to everyone who elects her as his mate. This logical impossibility is resolved if we interpret the modal proposition *de re*, in the divided sense (*insensu diviso*), which is the adverbial construal of the mode. This more sensible reading yields something along the lines of “if she agrees to his choice, then it follows that he necessarily is her mate.” Of course, when the formel decides not to choose a mate, she confirms Nature’s *positum* as a counterfactual conditional, regardless of whether or not we read her modal proposition in the composite or divided sense.

The veiled contradiction of Nature’s *positum* is in part related to her previous propositions regarding love, and her earlier assumptions constitute the *casus* of the *positum*. As Walter Burley elaborates in his treatise *De obligationibus*, a *casus* is generally a fictional circumstance or hypothesis regarding “the nature of reality outside the obligational disputation” (the context), and the *casus* is what underlies the so-called paradox of the *positum*.⁷⁰ A simple *casus* might be that the king’s crown is gold, whereas the stated *positum* is that the king’s crown is black. In the *Parliament*, Nature stipulates the *casus* of the obligational exchange appropriately before she proceeds to establish the game’s *positum*. Specifically, the disputation’s *casus* is the idea that God will “sende hym hire that sorest for hym syketh!” (implicitly, Nature’s “sone” the royal eagle). That is also to say that the suitor most stricken by love (“which of yow that love most entriketh”) then will win, in theory, the formel’s required approval. Nature’s modal proposition that the formel will choose the royal eagle is also more explicitly part of the debate’s *casus*, as he is indeed Nature’s superior choice: “My sone, the choys is to the falle.” As I have already noted, the obligational *positum* is generally at odds with the *casus*. In the case of Chaucer’s *Parliament*, pinpointing the suitor “sorest” in love with the formel is not only unprovable (“Ful hard were it to preve by resoun,” 534), but Nature’s assumption that she will choose the royal eagle contradicts even the very definition of choice itself! In his *Rules for Solving Sophisms*, written in 1335, William Heytesbury solves the contradictory elements of insolubles by treating a proposition in terms of its *casus*. He holds that all propositions in one way or another *signify* some context, even beyond the proposition itself (or as he clarifies, “precisely as its words pretend”).⁷¹ Similarly, Nature’s “condicioun” presupposes that the formel will not refuse Nature’s advice. In other words, Nature’s conditional antecedents signify a context in which creatures might follow the natural order and adhere to Nature’s instructions.

It is no coincidence that Robert Holcot examines the *positum* as it relates to marriage contracts and legal disputation.⁷² In strikingly similar

fashion, Chaucer, too, frames the obligational debate in terms of a marriage proposal. Specifically, Nature's *positum* is a *positio dependens*: the first *propositum* (that the formel agree to a suitor's choice) presupposes that a future event will actually take place. Walter Burley's rules, however, make the requirement that the future act embedded in a *positio dependens* is not to be contradicted. In other words, Nature's modal proposition fails to satisfy the requirements of a *positio dependens*: the formel does not in fact choose a male suitor, and this future act directly contradicts the *positum*. As a result, the problem of marriage is left tenuously unresolved. Similarly, Robert Holcot gives the example of an engaged couple, whereby both the man and the woman agree to marry on the condition that they both reveal the truth to one another on the following day. When the moment for truth telling arrives, however, the man unexpectedly says, "You are not my wife," and the woman says, "You are not my husband." For Holcot, the marriage proposal then results in a paradoxical situation precisely because both the husband and wife disregard Burley's rule for *positio dependens*. Similarly, the formel's silence throughout the debate leads precisely to just such a contradiction. Remarkably, the legal contract of marriage here is discussed in terms of *ars obligatoria*. Hester Gelber notes how "the parallels with *obligatio* make it clear that the structure of legal obligation is the same as the structure of the disputational obligation."⁷³

Chaucer, however, introduces the technique of *ars obligatoria* in the marriage proposal of the three male eagles as one method of undermining the efficacy of language and communication. Indeed, the logic of disputational obligation has no place in the dubious realm of love and emotion. In the end, the Respondents, who commit to the counterfactual *positum* of the obligational exchange, are for a short period able to maintain consistency and deduce unexpectedly logical connections: this in part fulfills the philosophical aim of the *obligationes*. Following the strategy of *positio impossibilis*, a degree of truth, we shall see, unexpectedly emerges from an otherwise impossible or false premise. The obligational debate fulfills its own purpose: the veiled contradictions inherent in the ideals of *fine amor* and the notions of natural love comically satisfy the preconditions for a disputation *de obligationibus*.

Chaucer here perhaps imitates the "obligational theology" of the fourteenth century, where medieval churchmen explicitly set up God as the *opponens* and the Christian believer as the *respondens* in a formal obligational exchange.⁷⁴ Gelber's study of fourteenth-century Dominican literature shows how God's revelations—"precepts and otherwise hidden information about the particular set of compossibilities he has chosen to enact"—function as "*positiones* to which the *viator* obligates himself

through acts of faith.” Gelber adds, “by accepting God’s *positiones* the viator commits himself to the actuality of the world” (ibid.). In a similar vein, Chaucer casually sets up Nature (the vicar of God) as the *opponens* and her subjects (the birds) as the *respondens*. It is not surprising to find, in a poem concerned with Nature’s responsibility for providing the procreative impulse (“as I prike yow with plesaunce,” 389), that Nature embodies the plenitude of possibility, which includes both determined and undetermined possibilities. According to the rules of obligational exchange, the birds are “obligated” to follow Nature’s laws, adhere to the natural order, and ultimately accept her *positum*, which is indeed problematic because it appears to violate the principle of non-contradiction. Significantly, medieval theologians recognized that even God’s omniscience was constrained by the principle of non-contradiction, despite the supposed contingency of the divine commands and enactments directed at human beings. Whereas the theologians extended the “vocabulary of *obligatio* itself...to characterize the relationship between God and creation,”⁷⁵ Chaucer complicates this obligational exchange with the inevitable deterioration of logical coherence between Nature and her creations. Man obligates himself to God’s *positum* or theological covenant with a conditional proposition: *if* He chooses you, *then* salvation is assured. Similarly, if the formel chooses you, then you are necessarily graced with her love. Chaucer begins the disputation with a counterfactual, which allows for the imagination to logically stipulate (*via logica possibilitas*) what *would* result if the formel (in some alternate possible world) agrees to marry one of her possible suitors. In order for the debate to begin, the *respondens* accepts Nature’s *positum* as true—that is, God will reward the lover most severely stricken by Cupid’s arrow and the formel will then accept this choice made by the lover. In other words, the *positum* is true within the “possible world” of the disputation.

As I stated earlier, there is no point in attempting to match trivial rules to the poem: not only do the rules of *obligationes* vary among treatises,⁷⁶ but Chaucer’s knowledge of obligational disputes is also not altogether precise. Rather, the poet is more preoccupied with philosophical purpose. Chaucer comically employs modal terms and adopts the technique of *ars obligatoria* as a clever way of revealing Nature’s inherent contradictions, trapping her in a faulty defense of her position. It is not my intention, however, to over-emphasize Nature’s failings, but rather, as Ian Robinson sums up, “if Chaucer is not simply against his sexy Venus it is equally true that he is not simply *pro* Nature.”⁷⁷ After Nature establishes the counterfactuals of the disputation, a series of *proposita* are put forth by the Opponent to the Respondent. On the surface, the purpose of the logic game is to “wynne or lese” (402). During the *obligationes*,

the Respondent then has the option to accept (“accepteth” or “Assented were” 532, 526), deny (“That shal nat be!,” 450), or doubt (“Ful hard were it to preve,” 534). The Respondent then comments on the reasons for his response. The Opponent may shout *cedat tempus* in order to pause the game temporarily to make some observation: Nature halts the dispute—“Hold youre tonges there!” (521)—in order to “a conseyl fynde / Yow to delyvere, and fro this noyse unbynde” (523–4).

A *propositum* may be “sequentially relevant” (*pertinens sequens*), that is, it logically follows “from the conjunction of the *positum* together with any *proposita*.” On the other hand, a *propositum* may be “incompatibly relevant” (*pertinens repugnans*), that is to say, “its contradictory follows from that same conjunction.”⁷⁸ If the Respondent does not concede to a sequentially relevant *propositum* nor deny an incompatibly relevant *propositum*, then the *propositum* is considered “irrelevant”: in this case, the Respondent must reply (accept, deny, or doubt) according to a common set of beliefs—that is, knowledge *outside* the circumstances stipulated in the *casus*.

It becomes clear that the obligational dispute fragments into disconnected pieces as the lower birds usurp Nature’s role as the *opponens* and begin putting forth a pandemonium of “irrelevant propositions,” which require knowledge outside the *casus* in order to make a reply. For example, the terslet posits:

Me wolde thynke how that the wortheieste
 Of knyghthod, and lengest had used it,
 Most of estat, of blod the gentilleste,
 Were sittyngest for hire, *if that hir leste*;
 And of these thre *she wot hirself*, I trowe,
 Which that he be, for it is light to knowe.

(548–53, emphasis mine)

The water-fouls then put forth what appears to be a sequentially relevant *propositum*, “But she wol love hym, lat hym love another!” (567). The turtledove (speaking on behalf of the seed-foul) denies this *propositum* as irrelevant with a “Nay” (582) and comments, “God forbode a lovee shulde chaunge!” (582). The Duck, however, then doubts with “Who can a resoun fynde or wit in that?” (591). The following discussion then breaks down into mere insults and contradictory statements that are directly at odds with Nature’s *positum*. For example, the response, “Lat ech of hem be soleyne al here lyve!” (607) fails to even address Nature’s *positum*. As Boitani concludes, “all of them [the lower birds] indicate, first by their noisy impatience (491–7) and then by flying away satisfied, the

basic irrelevance for them of the problem itself and the socio-cultural convention it represents."⁷⁹ In the end, the opponent, and possibly a jury, evaluates the responses of the Respondent.⁸⁰ Nature concedes to the contradiction implicit in her *casus* and *positum* with the recognition that "it may not here discussed be / Who loveth hire best" (624–5), and when the formel finally refuses to make a choice, this act brings the counterfactual *positum* back to the "actual world" nested within the dream. Until this point, the duration of the *obligationes* has concerned itself with efforts to reconcile mutually impossible desires. The failure to reconcile the differing compossibility sets, however, does not do away with the imagination nor the capacity for expectation and "hope" (697). The *Parliament's* multitude of *proposita* crammed into Chaucer's mock-debate *de obligationibus* not only substantiates Nature's principle of plenitude, but also suggests a celebratory work that focuses on the infinitude of possibilities inherent in the artist's remarkable "craft" (1).

***Tempus Obligationis* and Aristotle's Necessity of the Present**

Obligational debates are generally understood to occupy a single instant of time. This rule of temporal suspension is known as the *tempus obligationis*. Thirteenth-century obligational rules, adhering to Aristotle's thesis of the necessity of the present, claim that the counterfactual *positum* cannot refer to the instantaneous present of the actual world precisely because it is counterfactual. Scotus, however, completely dropped this rule, "a revision which made it possible to understand obligational answers as partial descriptions of how things could be instead of regarding them as a internally consistent set of propositions without a sensible interpretation."⁸¹ For Scotus, the revision allowed for simultaneous opposites to arise without contradiction during the debate: alternate possible worlds, comprising of differing compossibility sets, can indeed become actual during the course of the *obligationes*. As to the counterpossibilities regarding the formel's rejected suitors, each class of birds separately posits alternate sets of mutually impossible histories, which might indeed coincide with what is actual. For example, the turtledove comments, "God forbede a lovere shulde change" (582), whereas the goose remarks "But she wol love hym, lat hym love another!" (567): eternal faithfulness toward a lover and disloyalty in love are not compossible propositions. Nonetheless, the debate *de obligationibus*, which signifies a single instant in the temporal fabric of the cosmos, implies a web of overlapping elements of both the actual world and of multitudinous possible worlds. Gelber clarifies, "God's capacity to will opposites at any given moment of actual

time meant that without violating the Principle of Non-contradiction, the instantaneous *tempus obligationis* might coincide with an actual state of affairs whose opposite was posed as counterfactually actualized during the course of the disputation.⁸² After the avian debate has ended, however, it becomes difficult to discern what is in fact actual and what is indeed counterfactual. There is no clear division between the various interlocking frameworks of storytelling, each supporting the realm of *potentia*: the narrator's imagination of books, his bedtime dreams, Scipio's dream, the narrator's reflections on possible dreams, the obligational counterpossibilities of the avian debate, and finally, the overall poem itself.

Following medieval *positio* rules, the obligational exchange occurring in Nature's park confines the time of the obligational debate to a single temporal instant. It is clear that Nature and her birds are all conscious of the fact that the obligational debate occupies an instantaneous "now" in real time. First of all, time-telling signals are deliberately omitted from the debate, especially in contrast to the crepuscular images that otherwise inundate the poem (for instance, "And on a bed of gold she lay to reste / Til that the hote sonne gan to weste," 265–6). Rather, Chaucer consistently uses the verb "tarynge" (415, 468, 565, 657) to signify a temporal halt. The verb is used in the *Reeve's Prologue* to denote a temporal suspension: "Sey forth thy tale, and *tarie* noght the *tyme*" (3905, emphasis mine). The *OED* (2nd edition) also cites the *Reeve's Prologue* for its definition "to delay, retard, defer, put off (a thing, an action); to protract, prolong." Similarly, every bird in the *Parliament* is acutely aware of the debate's static temporality in "tarynge here" (469), and all assent to the advice of the goose, who equally "love[s] no tarynge" (565). Ironically, the bird with the longest (and perhaps most tiresome) speech is claimed to have "tariede noght" (415), and yet, four long stanzas later, he has to signal that his "tale is at an ende" (441). Finally, Nature terminates the meeting "for tarynge lengere heere!" (657). The formel's choice then signals an end to the static temporality of the obligational debate.

The formel considers simultaneous alternatives (i.e., the three suitors), and confronts the Aristotelian doctrine of "everything necessarily is when it is" (the idea of the necessity of the present), which dictates that only one possibility (or suitor) can be actualized in the present instant. Scotus clarifies, "I do not call something contingent because it is not always or necessarily the case, but because the opposite of it could be actual at the very moment when it occurs."⁸³ In this context, the Scotist denial of Aristotle's necessity of the present (*Omne quod est, quand est, est necessarium*) not only reassessed contingency in terms of simultaneous alternatives, but also developed the dialectical and logical framework for *ars obligatoria*. Similarly, the formel insists on *not* choosing a mate,

which can be construed as a straightforward rejection of the principle that everything necessarily is when it is: she maintains the potential for simultaneous alternatives (the three suitors). She *possibly* (as opposed to necessarily) makes a choice in the temporal “now.” Russell Peck speaks of Chaucer’s exploration of “ways in which men break out of their abstractive prisons.”⁸⁴ Following the Scotist tradition, the formel’s tautology does not permit the necessity of the present to do away with the modality of simultaneous alternatives. Rather, she breaks free from the trappings of Aristotelian necessity imposed on her experience. In this temporal instant of the *obligationes*, synchronic alternatives take precedence over the traditional Aristotelian thesis of necessity. Nature, however, reiterates Aristotle’s necessity principle with the declaration that “‘Now, syn it may non otherwise betyde,’ / Quod Nature, ‘heere is no more to seye’” (654–5). Like Theseus of the *Knight’s Tale*, Nature embraces necessity as a virtue to be upheld, an anchor within the infinite sea of possibilities. In this way, Nature refashions the formel’s denial of necessity as a kind of ironic testament to necessity itself. As we have seen, Chaucer’s rigorous thought experiment challenges the logical assertion that change—as experienced by sentient beings in the mutable realm—must necessarily constitute the transition from potential to actual modes of being. In the end, Chaucer’s dream not only contains the range of possibilities, but is also a reflection of a poet’s creative thinking transcending even the realm of possibility itself. This is poetic imagination at its finest.

CHAPTER 6

CONCLUSION: CHAUCER AND THE REALITY OF CHANGE

The source of Chaucer's narrative action lies in the energy of shifting element-forms, the constant flux of chemical combinations that arise from the four elements and their contrarious qualities. Within the sublunar region of mutability, transmutations of material substance—the successive replacement of one form with another—drive the narrative to a point of irresolvable conflict. Beneath the inner sphere of the moon, Chaucer's fictional characters are both comically and tragically subsumed within this Aristotelian model for natural change. Indeed, the human body is a composite of four elements, a corporeal *mixtum*, “That therys erthe, water, fir, ne eir, / Ne creature that of hem maked is” (*KT*, 1.1246–7). Natural law not only guarantees the putrefaction of the body but also drives the vacillations of human emotion. To put it another way, the exterior world of matter is inextricably tied to inner experience.

As we have seen in previous chapters, characters struggle to maintain fixed ideals in a physical world of corruption and decay. Arveragus of the *Franklin's Tale* finds it difficult to uphold his privileged ideals of “trouthe” in a world of constant change where elemental earth (the black rocks) is transmuted into some other thing that is both unseen and unknown. As I have shown, Chaucer uses imagery from alchemical treatises, such as the *Sun's Letter to the Crescent Moon*, to relate the Breton stone to the Philosophers' Stone, but its exact symbol and meaning in the *Franklin's Tale* is obfuscated by Chaucer's enigmatic ending. The dreamer in the *House of Fame* also experiences firsthand the physics of change: Geoffrey, himself, is subject to the intension and remission of forms in the closed system of a rotating earth, despite his resolve to see from his own center. Both interior and exterior perceptions of the wicker-globe's rotation on its axis exemplify how the poem's relativity of motion thwarts the narrator's search for a self-moved mover (*autokinetos*). Poignantly, Troilus falls

victim to the alchemy of love, which, too, is inexorably subject to the natural laws of change. Alchemical allusions in the *Troilus* (for example, Criseyde's dream of the mercurial white eagle, the alchemical event of the new moon, the conjunction of Saturn and Jove, and so forth) promise readers a new, higher form of matter. However, the chemical combination of Troilus and Criseyde in Book 3 (by way of Pandarus, the aspiring alchemist of romantic love) also has deeply tragic consequences: natural law guarantees that original reactants of this chemical union are inevitably and irreversibly changed or destroyed. These and other transmutations of physical substance go beyond the realm of the material world to corrupt the invisible and elusive interiors of Chaucer's characters. *Gentillesse*, *courtoisie*, *trouthe*, *temperance*, and other related noble virtues appear to be just as volatile as the elements in Aristotle's chemical world. In short, the metaphysical *reality* of change is of primary concern to a philosophical poet faced with the age-old problem of mutable forms. This is complicated by the existence of possible, unrealized forms, which, as I argue in chapter 5, have an independent ontological status in their own right.

One other mode of change, however, has eluded us in previous chapters. It is appropriate to pause here to consider the early attempts at defining "change" as it relates to the Neoplatonic tradition of finding truth and meaning in number. Specifically, change can be defined according to medieval arithmology and the inter-relationship between the Monad and the Dyad.¹ The Monad—the Neoplatonic One—supposedly derives from what the Pythagoreans call *menein* (to remain) and embodies the eternal and unchangeable. In his commentary on the *Somnium scipionis*, Macrobius identifies the quiescent Monad as "the point because, like the point, which is not a body but which produces bodies from itself, the monad is said to be not a number but the source of numbers."² The Monad's extension in any direction forms an invisible line, represented by the Dyad. In other words, the Dyad is a "line protracted from the point [the Monad] by giving it two termini."³ Martianus Capella, who writes on the marriage between Mercury and Philology, claims that "number takes its beginning from the Dyad; and it is conceptual embodiment and the evidence of first motion. It is also the mother of the elements."⁴ In other words, the geometric line (the Dyad) is by definition the concept of change, corruption, and "motion" itself. To clarify, Macrobius declares that the Dyad

first departed from that single Omnipotence [the Monad] into the line of a perceptible body, and therefore refers to the errant spheres of the planets and the sun and moon, since these have been separated into a number from that which is called immovable (*aplanes* in Greek), and have been turned back in counter motion.⁵

Finally, a three-dimensional solid body is formed by a chain of even numbers in accord (the Dyad), and “thus with *even numbers* progression up to eight represents a solid body.”⁶

Chaucer, undoubtedly influenced by the Neoplatonists, incorporates the concept of number (the Dyad) as a representation of change and motion in his poetry. Throughout the *Parliament of Fowls*, the poet’s penchant for the mechanical linking of male and female birds ordained by Nature and the repeated emphasis on “two” (278), “peyre” (238), “feere” (410), “fyrst” (528), “soleyn” (607, 614), and “evene noumbres” (381) relates to the medieval fascination with the Monad and the Indefinite Dyad (*ahoristos dyas*) in classical arithmology. Specifically, the emphasis on “two” (the Dyad) is repeated throughout the poem. Examples include: “two yonge folk” (278), “peyre” (238, 595), “feere” (410), and “evene noumbres” (381). But more crucially, the formel eagle comically represents the Pythagorean Monad:

But to *the poynt*: Nature held on hire hond
 A formel egle, of shap the gentilleste
 That evere she among hire werkes fond,
 The moste benygne and the goodlieste.
 In hire was everi vertu at his reste,
 So ferforth that Nature hireself hadde blysse
 To loke on hire, and ofte hire bek to kysse.

(372–8, my italics)

The formel’s geometric representation of the Monad is precisely “the poynt” (372). As the Neoplatonic One, she is the “goodlieste” and “most benygne” of Nature’s creations. There is no motion or need for change, but rather “was everi vertu at his *reste*” (emphasis mine). It follows (in the next stanza) that the Monad’s extension becomes the first “motion,” the Dyad: “Ye come for to cheese—and fle youre wey— / Youre makes, as I prike yow with plesaunce” (388–9). Chaucer’s pairing of mates forms the classical Dyad, as Martianus Capella puts it,

Because between it and the Monad the first union and partnership occurs...and it is Union, since the two extremes, which contain the means, take their position on either side.⁷

The effect of this union is what Capella calls “the first motion,” which occurs as male and female—“the two extremes”—are set in motion, and the even pairs “fle youre wey.” The association of “first movement” with the binary “union and partnership” of birds (i.e., the formation of the Dyad) also occurs at the end of the poem, when the birds pair “By

evene acord [the Dyad], and on here way they wende" (668) and "That foules maden at here flyght away" (694). The creation of the Dyad (the partnership of birds grouped into even numbers) is also a source of the poem's quarreling and discord. Not surprisingly, "Discord and adversity," as Capella states, "originate from it [the Dyad]."⁸

As we can see, Neoplatonic sources provided Chaucer with a viable system—a static visualization—for abstracting the concept of change. But unlike Aristotle's scientific model for the physics of change, arithmology was limited to number symbolism. In other words, Chaucer's Neoplatonist readings did not provide a satisfactory resolution to the problem of material change. Rather, it was the philosophy of alchemy and physics that framed his attention to the science of mutable forms, as evidenced by our analyses in chapters 2, 3, and 4. As many have noted before me, the art of alchemy is also a metaphor for Chaucer's poetry. Of course, the poet's linguistic alchemy creates the potential for multiple transmutations of meaning with each interpretative re-reading of textual material. Like the "philosopre" of the *Franklin's Tale*—that is, the clerkly alchemist and protean-master of illusion who acquires wisdom in lieu of *real* gold from Aurelius's coffers—Chaucer is made aware of interpretive ambiguities from his unique, perspectival place in the natural world, which can be reified as a phenomenal reference point for reflecting on *gentil* conduct and the noble virtues. In this light, the sudden transmutation of black matter (the Breton stone) is similarly related to the motion of sound in the *House of Fame*, which considers *motus localis* (change of place) both kinematically and dynamically. Here, Chaucer is also made aware that his own writing is subject to the intension and remission of forms, a *generans* for the poem's polyvalent perspectives. As we have seen in previous chapters, Chaucer exploits the scientific thinking of his day in order to conceptualize and aestheticize his own unique philosophy of physics. As I have argued, this exploration into the realm of sublunary change includes (but is not limited to) the related disciplines of alchemy, mechanics, modality, and arithmology.

Chaucer's interest in material change and the Boethian preoccupation with the vicissitudes of Fortune are often confused by Chaucerians. However, we also know that Boethius does indeed present Chaucer with a cosmological template for material change. According to Boethius, God's ordinance for the sublunary realm "atemprith the elementz togidre amonges hemself, and transformeth hem by entrechaungeable mutacioun" (*Boece*, iv.pr6). Despite the rapid motion of changing contrarious qualities, an imperceptible bond still holds dissimilar elements within certain bounds: "That elementz that ben so discordable / Holden a bond perpetuely durynge" (*Tr.*, III.1753–4). Of course, this binding force is the

chain of love ordained by God, “For with that faire cheyne of love he bond / The fyr, the eyr, the water, and the lond / In certeyn boundes, that they may nat flee” (*KT*, 1.2991–3). Still, this uniquely classical and medieval response to the perceived instability of matter, which indeed transmutes in a cyclical pattern of physical interchange, falls short of providing us with consolation. In the *Knight's Tale*, the old and experienced Egeus tries his hand at consoling Theseus:

No man myghte gladen Theseus,
 Saving his olde fader Egeus,
 That knew this worldes transmutacioun,
 As he hadde seyn it chaunge, bothe up and down,
 Joye after wo, and wo after gladnesse;
 And shewed hem ensample and liknesse.

(1.2837–42)

His statement confirms the reality of transmutation, but his wisdom fails to reconcile the mutability of forms with higher notions of the eternal, unchanging One. Theseus reinterprets the pessimism of Egeus's bleak vision within his First Mover speech. Specifically, he reiterates the theme of “this worldes transmutacioun” by using the example of an oak tree:

Loo the ook, that hath so long a norisshynge
 From tyme that it first bigynneth to sprynge,
 And hath so long a lif, as we may see,
 Yet at the laste wasted is the tree.

(1.3017–20)

This natural cycle of birth and decay is perhaps reminiscent of Nature's alchemy in the opening lines to the *General Prologue* and the rhetorical topos of the *descriptio temporis*. Significantly, Theseus had earlier “leet comande anon to hakke and hewe / The okes olde, and leye hem on a rewe / In colphons wel arrayed for to brenne” (1.2865–7). Theseus here commandeers Nature's role by accelerating the natural process of corruption and decay, in which “at the laste wasted is the tree.” Unlike the natural death of oak trees (as articulated in his First Mover speech), Theseus *himself* “leet comande anon” the old oak trees to be hacked and hewn before being at last “wasted.” In other words, he executes the laws of Nature according to his own timetable for change and constructs the funeral pyre as a means of containing the chaos of shifting element-forms. To put it another way, he quite literally transmutes wood (earth) into fire with his “fyr-makyng” (1.2914) and transforms Arcite's body to “asshen colde” (1.2957). Similarly, the First Mover speech attempts to confine the

chaotic transmutation of elements within “certeyn boundes.” While the Prime Mover of the *Knight’s Tale* “with that faire cheyne of love he bond / The fyr, the eyr, the water, and the lond,” John the carpenter of the *Miller’s Tale* literally snaps the chain in half, and “with his ax he smoot the corde atwo” (l.3820). In fact, the narrative plot of Chaucer’s fabliau serves to recapitulate the rapid succession of physical transformations, whereby one element is substituted for another. The Miller’s version of Theseus’s air, earth, fire, and water is far more tangible in the town of Oxford: the raw *earth* used by Absolon to wipe his mouth (“With dust, with sond, with straw, with clooth, with chippes,” l.3748) quite literally displaces the *air* of flatulence. The elemental *fire* of Gerveys’s hot iron transmutes (linguistically) into Nicholas’s call for elemental *water*. We can see how the Miller’s vivifying material world of inconstant matter contrasts with the Knight’s ordered chain of bounded elements. Here, we are reminded that the corruption and decay of Arcite’s body is undoubtedly linear, despite the Knight’s assurances of cyclical renewal.

Death and decay—the natural products of Aristotle’s contrarious qualities—are indeed the perennial subjects of literature, and the physics of sublunary change is therefore reflected in the process of storytelling itself. While there are literally scores of works on *contemptus mundi*, Chaucer undoubtedly draws from his translation of Innocent III’s *De miseria condicionis humane*, which brings together a cohesive formula for physical change within the sublunar region. According to Innocent, the earthly process of putrefaction is both ubiquitous and ongoing:

De die in diem magis ac magis humana natura corrumpitur, ita quod multa fuerunt olim experimenta salubria que propter defectum ipsius hodie sunt mortifera. Senuit iam mundus uterque, megacosmus et microcosmus, et quanto prolixius utriusque senectus producitur, tanto deterius utriusque natura turbatur

(From day to day human nature is corrupted more and more, so much so that many things were formerly healthy experiences that are today deadly things because of the failing of human nature itself. Each world has already grown old, the macrocosm and the microcosm, and the longer the old age of each is extended, the more severely the nature of each is disturbed).⁹

As we can see, this medieval version of entropy is simultaneously both cyclical and linear. It is cyclical in the sense that human bodies are resolved into their primary elements, which then transmute into other elements. “Certainly,” writes the pope, “it is natural that something made of matter should be dissolved into matter.”¹⁰ He adds, “Man is indeed formed from earth. . . . he becomes fuel for the fire, food for worms, a mass of putridness. . . . man is formed of dust, of clay, of ashes.”¹¹ To this I would add that

Innocent's selections from the Bible support a strikingly *monistic* philosophy, as epitomized in God's injunction "Terra es, et in terram ibis." For Chaucer, this philosophical framework for the study of matter, form, and change is reinforced by the Aristotelian and alchemical texts being copied and circulated in fourteenth-century England.

Throughout Chaucer's works, the literary topos of the alchemical spring functions in the text as an emblem for the labile world of endlessly transforming element-forms. First, the metaphysical structure of reality depends on notions of change as it relates to temporality, the coming and ceasing to be of May, and its various manifestations. In addition, Chaucer repeatedly draws attention to the chemical basis of the human body as a natural product of the four elements, the physicalist view that all living creatures comprise an elemental *mixtum*: it is indeed worth reiterating, "That ther nys erthe, water, fir, ne eir, / Ne creature that of hem maked is" (*KT*, 1.1246–7). Similarly, the author of the *De compositione alchemiae* draws special attention to the four elements united in the human body:

Et dixit Hermes quod terra mater sit elementorum et de ea sunt nata et ad eam revertuntur. Et dixit Moyses quod omnia de terra procedunt et ad eam revertuntur. Dixit Hermes: sicut omnia ex uno procedunt, sic et hoc opus maius de una re fit et de una substancia, *et sicut homo habet in suo corpore .iiii. elementa, sic deus creavit ea et sicca et disiuncta et coniuncta et collata atque expansa*

(And Hermes said that earth is the mother of the elements, which are born of her and return to her. Moses, too, said that all things come of the earth and return to it. As Hermes said, just as all things come of one, so also is the Great Work done with one thing and one substance. *Even so does man contain the four elements united in his body, though God created them variously as dry or separate, joined and collected, or scattered*).¹²

Like the alembic of an alchemist's workshop, the living human body is a vessel for chemical change, the rapid transmutation of one element into another. The physics of change and its conceptualization in medieval culture is thus inextricably tied to notions of "aliveness." On the other hand, the energizing principle that drives this form of aliveness, of being a corporeal *mixtum* of interchanging elements, is coupled with the concomitant process of death and decay, as I have suggested. Mutability—the interchange of one element into another—and the temporal experience of living are thus complementary aspects of a totalizing phenomenon. From this vantage point, the contradictory nature of Theseus's unifying ideal—the static chain of love—is closely related to Chaucer's presentation of corruptibility as a unique form of aliveness. Indeed, the connection between "aliveness" and the teleological process of corruption

and decay is commonplace in medieval literature and even appears in Innocent's *De miseria*:

Semper enim futura nascuntur, semper presencia moriuntur, et quicquid est preteritum totum est mortuum. Morimur ergo semper dum vivimus, et tunc tantum desinimus mori cum desinimus vivere. Melius est mori vite quam vivere morti, quia nichil est vita mortalis nisi mors vivens. . . hoc est illud mirabile, quod quanto plus crescit tanto magis decrescit, quia quanto plus vita procedit tanto magis ad mortem accedit

(For the future is always being born, the present is always dying, and whatever is past is utterly dead. We are therefore always dying while we live, and we only stop dying at such time as we stop living. It is better to die for life than to live for death, because mortal life is nothing but a living death. . . the miracle is this, that life decreases by as much as it increases, because it moves near to death by as much as it moves forward).¹³

Remarkably, the medieval idiom of *mors vivens* is unique and profoundly central to the physics of transformation in Chaucer's poetry. As we have seen in previous chapters, the human alembic distills corporeal matter until all physical substance is suddenly wasted away. Chaucer's network of distillation imagery in the *Troilus* and the sudden removal of the Franklin's Breton stones create literary *vacua* in the text itself. But more important than these lacunae Chaucer has created are those intangible "things" that remain behind—the shadowy forms that change and are changed within the story he is telling.

So profoundly has Chaucer understood the philosophical import of fourteenth-century physics that to miss this is to ignore inner motions of the will—the energies that counteract the heavy forces of physical change inflicted on God's living creatures. In other words, manifestations of sublunar change stimulate human beings to agency. Simultaneously, they are also subject to change from within. The physics of inner being—the experiencing of joy after woe and woe after joy—is a painted process, and one well worth capturing. The poet not only conveys in writing our perceptual experience of the mutable world and what it means for the traditional values of high medieval culture, but he also unveils our interior process of self-reform and the inertial forces that combine to make this nuanced subjectivity. While Chaucer's artistic and philosophical experiment—designed to capture the energy of contrarious qualities and express the motion of element-forms in his own writing—ultimately proves elusive, his deeper interest lies in exploring the profound effect of sublunary change on character and identity. For Chaucer the Alchemist, this yields an artistic *tour de force*, allowing him to sculpt the slow and imperceptible, yet inexorable transformations of self.

APPENDIX: THE MERTON THEOREM OF UNIFORM ACCELERATION

The formula is expressed in its simplest form as $S = \frac{1}{2} V_f t$, where V_f is the final velocity, t is time, and S is distance from the starting point to finish. Essentially, the Calculators defined uniform acceleration whereby a body at constant velocity would traverse the same distance in the same time as the uniformly accelerating body if it maintained a constant velocity at half the final velocity (V_f) of the accelerated body (i.e., the mean degree). It should be noted that the theorem was expressed rhetorically, as opposed to algebraically. The Calculators further observed the relationship whereby $V_f = at$, where a is uniform acceleration. Of course, this theorem was widely popular throughout Europe and numerous attempts were made to give a more rigorous formal proof. This interest contributed to the discussion on *intensio et remissio motus* and offered a more accurate and precise definition of uniform acceleration and uniformly changing acceleration, that is to say, uniformly difform motion (*motus uniformiter difformis*) and uniformly “difformly difform” motion (*motus uniformiter difformiter difformis*).

The Franciscan Giovanni di Casali—originally from Bologna but who had also studied in Cambridge—was one of the first to devise a geometrical system for observing the qualities (ca. 1351). At the University of Paris, Nicole Oresme (d. 1382), in his *On the Configuration of Qualities*, designed a two-dimensional graphing system in order to visually analyze the conclusions derived at Merton. His x-axis represented time and the y-axis represented the qualitative line of intensity at various points (i.e., instantaneous velocity). Such a graph would produce a triangular shape. The area of this triangle was then used to describe the quantity of the quality (i.e., quantity of motion). The Merton theorem is then represented by the area of the triangle, where one-half times the base times the height (i.e., $1/2V_f t$) is equal to the total distance traversed (S). A geometrical restatement of the Merton theorem lies in the fact that the area of this triangle, representing uniformly difform motion, is equal to the area of the rectangle representing uniform velocity at the half-point.

NOTES

1 Introduction: Chaucer's Sublunar Region of Mutable Forms

1. Barry Windeatt, "Literary Structures in Chaucer," in *The Cambridge Companion to Chaucer*, ed. Piero Boitani and Jill Mann, 2nd ed. (Cambridge: Cambridge University Press, 2004), 215.
2. Roy Arthur Swanson, "Ovid's Theme of Change," *The Classical Journal* 54 (1959): 201.
3. In *The Book of Duchess*, Chaucer avoids the physical transformation of Seix and Alcyone into seabirds: see also Elizabeth Allen, "Flowing Backward to the Source: Criseyde's Promises and the Ethics of Allusion," *Speculum* 88 (2013): 688.
4. Robert M. Longworth, "Privileged Knowledge: St. Cecilia and the Alchemist in the *Canterbury Tales*," *CR* 27 (1992): 87.
5. Hugh of St. Victor, *The Didascalicon of Hugh of Saint Victor*, trans. Jerome Taylor (New York and London: Columbia University Press, 1961), 54.
6. Aristotle, *Meteorologica*, in *The Complete Works of Aristotle*, ed. Jonathan Barnes and trans. E. W. Webster (Princeton, NJ: Princeton University Press, 1984), 555.
7. Jacqueline Tasioulas, "'Dying of Imagination' in the First Fragment of the *Canterbury Tales*," *Medium Aevum* 82 (2013): 227–8.
8. E. V. Gordon, ed., *Pearl* (Oxford: Clarendon, 1953), lines 1067–74. See also lines 1081–4, 1090–3.
9. Aristotle, *Physics*, trans. Robin Waterfield (Oxford: Oxford University Press, 1996), 56.
10. Hugh of St. Victor, *Didascalicon*, 72.
11. Edward Grant, *Physical Science in the Middle Ages* (Cambridge: Cambridge University Press, 1971), 21.
12. David C. Lindberg, *The Beginnings of Western Science: The European Scientific Tradition in Philosophical, Religious, and Institutional Context, Prehistory to A.D. 1450*, 2nd ed. (Chicago: University of Chicago Press, 2007), 286.
13. Paul Beekman Taylor, *Chaucer's Chain of Love* (Cranbury, NJ: Fairleigh Dickinson University, 1996), 23.
14. Paul Strohm, "Chaucer's Lollard Joke: History and the Textual Unconscious," *SAC* 17 (1995): 23–42. See also Martin Stevens and

- Kathleen Falvey, "Substance, Accident, and Transformations: A Reading of the 'Pardoner's Tale,'" *CR* 17 (1982): 142–58.
15. In Book 7 of John Gower's *Confessio Amantis*, Genius also makes a speech on the rudiments of medieval physics.
 16. Stephen A. Barney, "Troilus Bound," *Speculum* 47 (1972): 450. Chaucer also inherits versions of Empedoclean theory from his Neoplatonic readings of Macrobius, Augustine, and, even more tangibly, Martianus Capella, who in *De Nuptiis Philologiae et Mercurii* begins with this declaration to the Almighty: "You bind the warring seeds of the world with secret bonds and encourage the union of opposites by your sacred embrace. You cause the elements to interact reciprocally, you make the world fertile." The "warring seeds" are the moving forces of opposition that classical and medieval philosophers understood to move all of the elements in the cosmos. The marriage between Philology and Mercury is therefore construed as a "union of opposites," a bond between man and woman. Martianus Capella, *The Marriage of Philology and Mercury*, ed. William Harris Stahl, Richard Johnson, and E. L. Burge (New York: Columbia University Press, 1977), 3.
 17. For instances of the "bond" in the *Troilus*, see, for example, l.225, 256, and 840; II.1223; III.1261, 1358, 1754, 1754, 1766, and 1768. For its opposite, the "unbond," see III.1732 and IV.675.
 18. Barry A. Windeatt, "The Scribes as Chaucer's Early Critics," *SAC* 1 (1979): 120.
 19. See, for example, Robert Schuler, "The Renaissance Chaucer as alchemist," *Viator* 53 (1984): 305–33.
 20. Lindberg, *Western Science*, 224.
 21. Quotation from Ralph Hanna, "Literacy, Schooling, Universities," in *The Cambridge Companion to Medieval English Culture*, ed. Andrew Galloway (Cambridge: Cambridge University Press, 2010), 188.
 22. Ian P. Wei, "Medieval Universities and Aspirations to Universal Significance," in *The Global University: Past, Present, and Future Perspectives*, ed. Adam R. Nelson and Ian P. Wei (New York: Palgrave Macmillan, 2012), 138.
 23. Michael H. Shank, "Academic Consulting in Fifteenth-Century Vienna: The Case of Astrology," in *Texts and Contexts in Ancient and Medieval Science: Studies on the Occasion of John E. Murdoch's Seventieth Birthday*, ed. Edith Sylla and Michael McVaugh (Leiden: Brill, 1997), 247.
 24. *Ibid.*, 248.
 25. *Ibid.*
 26. Hanna, "Literacy," 190.
 27. C. H. Lawrence, *The Friars: The Impact of the Early Mendicant Movement on Western Society* (New York: Longman, 1994), 181–217; 174–5.
 28. Glending Olson, "Measuring the Immeasurable: Farting, Geometry, and Theology in the *Summoner's Tale*," *CR* 43 (2009): 414–27; William F. Woods, "Symkyn's Place in the *Reeve's Tale*," *CR* 39 (2004): 17–40; Kathryn L. Lynch, *Chaucer's Philosophical Visions* (Cambridge: D.S. Brewer, 2000).

29. J. D. North, *Chaucer's Universe* (Oxford: Clarendon, 1988), 7.
30. Lynch puts forth the possibility that Chaucer attended Oxford sometime between 1360 and 1366 at a time when Ralph Strode was at Merton: *Philosophical Visions*, 19. One of the difficulties in disproving such speculations lies in the fact that neither Oxford nor Cambridge kept a record of its students.
31. "After whom the lane that ran by their college was called": G. M. Trevelyan, *Trinity College: An Historical Sketch* (Cambridge: Trinity College, 1943), 5. Henry VIII later combined King's Hall with Michaelhouse in 1546 to establish Trinity College.
32. Derek S. Brewer, "The Reeve's Tale and the King's Hall, Cambridge," *CR* 5 (1971): 311–12.
33. Derek S. Brewer, "King's Hall," 312.
34. "Chaucer could have become aware of mathematical intrusions into philosophy and theology in various ways," and the significance of Ralph Strode's fellowship at Merton "during a period when intellectual trends established earlier were being continued if not impressively enriched": Olson, "Measuring the Immeasurable," 419. See also William H. Watts, "Chaucer's Clerks and the Value of Philosophy," in *Nominalism and Literary Discourse: New Perspectives*, ed. Hugo Keiper, Richard J. Utz, and Christoph Bode, (Amsterdam: Rodopi, 1997), 148.
35. J. A. W. Bennett, *Chaucer at Oxford and at Cambridge* (Toronto: Oxford University Press, 1974).
36. Woods, "Symkyn's Place," 17; 24.
37. Edward Grant, *The Nature of Natural Philosophy in the Late Middle Ages* (Washington, DC: Catholic University of America Press, 2010), x; The miller's statement is one of many known impossible scenarios deployed *secundum imaginationem* (the Latin phrase used in the Middle Ages to articulate a thought experiment).
38. Allen, "Criseyde's Promises," 717.
39. D. W. Smith, "Phenomenology," *SEP* (Fall 2011), <http://plato.stanford.edu/archives/fall2011/entries/phenomenology>.
40. Edward R. Dijksterhuis, *The Mechanization of the World Picture* (London: Oxford University Press, 1961), 21.
41. "Chaucer was indeed a philosophical poet...but it seems to me that his prime interest was in natural philosophy (which, given the limits of medieval technology, often meant speculative natural philosophy)": A. C. Spearing, "Dream Poems," in *Chaucer: Contemporary Approaches*, ed. Susanna Fein and David Raybin (University Park: The Pennsylvania State University Press, 2010), 164.
42. Jessica Rosenfeld, *Ethics and Enjoyment in Late Medieval Poetry* (Cambridge: Cambridge University Press, 2011), 108.
43. Quotation from Helen Cooper, "I(A) the Miller's Tale," in *Oxford Guides to Chaucer: The Canterbury Tales* (Oxford: Oxford University Press, 1989), 99.
44. Rosenfeld, *Ethics and Enjoyment*, 30.

45. Walter Clyde Curry, *Chaucer and the Mediaeval Sciences* (New York: Barnes and Noble, 1926).
46. For books related to Chaucer's interest in optics, see Peter Brown, *Chaucer and the Making of Optical Space* (Bern and Oxford: Peter Lang, 2007); Norman Klassen, *Chaucer on Love, Knowledge, and Sight* (Cambridge: D.S. Brewer, 1995); Carolyn P. Collette, *Species, Phantasms, and Images: Vision and Medieval Psychology in "The Canterbury Tales"* (Ann Arbor: University of Michigan Press, 2001); Suzanne Conklin Akbari, *Seeing through the Veil: Optical Theory and Medieval Allegory* (Toronto, Buffalo, and London: University of Toronto Press, 2004).
47. See, for example, Marijane Osborn, *Time and the Astrolabe in "The Canterbury Tales"* (Norman: University of Oklahoma Press, 2002) and Sigmund Eisner, ed., *A Treatise on the Astrolabe*, A Variorum Edition of the Works of Geoffrey Chaucer, vol. 6: The Prose Treatises, part I (Norman: University of Oklahoma Press, 2002).
48. Richard Kieckhefer, *Magic in the Middle Ages*, Canto ed. (1989; repr., Cambridge: Cambridge University Press, 2000), 134.
49. Will H. L. Ogrinc, "Western Society and Alchemy from 1200 to 1500," *Journal of Medieval History* 6 (1980): 104.
50. Kieckhefer, *Magic*, 136.
51. Constantine of Pisa, *The Book of the Secrets of Alchemy*, ed. and trans. Barbara Obrist (New York: E. J. Brill, 1990), 71; 233.
52. Guillaume de Lorris and Jean de Meun, *Le Roman de la Rose*, ed. Ernest Langlois, 5 vols., SATF (Paris: Firmin-Didot (vols. 1–2) and Champion (vols. 3–5), 1914–24), 4.16087–105. For the translation, see Guillaume de Lorris and Jean de Meun, *The Romance of the Rose*, trans. Charles Dahlberg, 3rd ed. (Princeton, NJ: Princeton University Press, 1995). Interestingly, Albert the Great also links glassmaking to alchemy in his *Book of Minerals* (1.1.3).
53. Pauline Aiken, "Vincent of Beauvais and Chaucer's Knowledge of Alchemy," *Studies in Philology* 41 (1944): 371–89.
54. Richard Firth Green, "Changing Chaucer," *SAC* 25 (2003): 51.
55. Nicolette Zeeman, "Medieval Religious Allegory: French and English," in *The Cambridge Companion to Allegory*, ed. Rita Copeland and Peter T. Struck (Cambridge: Cambridge University Press, 2010), 149.
56. Quotation from Hoccleve, *The Regiment of Princes*, ed. Charles R. Blyth (Kalamazoo, MI: Medieval Institute Publications, 1999), 96 (line 1964).

2 Thought Experiments in Geoffrey's Dream: The Poetics of *Motus Localis*, Measurement, and Relativity in the *House of Fame*

1. The purported emphasis on sound is tangential. As Linda Tarte Holley points out, "The eagle's discussion of motion leads to the explanation of sound, but it should be made clear that he uses sound as an example

- of motion": *Chaucer's Measuring Eye* (Houston: Rice University Press, 1990), 124.
2. For example, the "worthy demonstracion / In myn [the eagle's] ymagynacion" (727–8) is a medieval thought experiment, and the term "was taken to refer primarily to a faculty of forming an image; it could mean an illustration in a geometrical treatise, and even the unfolding of an argument, or scheme": J. D. North, *Chaucer's Universe* (Oxford: Clarendon, 1988), 14. Edward Grant defines *secundum imaginationem* to mean "experience as adapted for use in thought experiments": *God and Reason in the Middle Ages* (Cambridge: Cambridge University Press, 2004), 180.
 3. The possible exception being Linda Tarte Holley's recent book: *Reason and Imagination in Chaucer, the Perle Poet, and the Cloud-Author: Seeing from the Center* (New York: Palgrave Macmillan, 2011). Holley claims: "these fourteenth-century writers construct for us a place where we may begin to understand ourselves as standing to see simultaneously both here and there, between reason and the imagination" (xvi).
 4. North, *Chaucer's Universe*, 17.
 5. Wilbur Owen Sypherd, *Studies in Chaucer's House of Fame* (1907; repr., New York: Haskell House, 1965), 99.
 6. J. A. W. Bennett, *Chaucer's "Book of Fame": An Exposition of "The House of Fame"* (Oxford: Clarendon Press, 1968), 70.
 7. Irvine unfolds the particular "language and sequence of topics" from grammatical sources. However, I argue that Chaucer incorporates *vox inarticulata* ("noyse" and "soun"), as opposed to mere *vox articulata* ("speche" and "word"), into the eagle's lecture in order to broaden the philosophical scope beyond mere grammatical theory: "Medieval Grammatical Theory and Chaucer's *House of Fame*," *Speculum* 60 (1985): 850–76.
 8. North, *Chaucer's Universe*, 17.
 9. For Dante's text, see Dante Alighieri, *De situ et figura, sive forma, duorum elementorum, aque videlicet et terre*, trans. and ed. G. Padoan (Florence: Le Monnier, 1968). For a discussion on the ways Dante's *De situ* relates to the *Divine Comedy*, see David Alexander, "Dante and the Form of the Land," *Annals of the Association of American Geographers* 76 (1986): 45; *La Commedia di Dante distribuita per materia*, ed. A. Orlando (Florence: Sansoni, 1965). For example, lines 121–6 in Canto 34 of the *Inferno* express the apparent motions of sea water and dry land at the moment when Satan falls from heaven: "Da questa parte cadde giù dal cielo; / e la terra, che pria di qua si sporse, / per paura di lui fé del mar velo, / e venne a l'emisperio nostro; e forse / per fuggir lui lasciò qui loco vòto / quella ch-appar di qua, e sù ricorse." (On this side he [Beelzebub] fell down from Heaven; and the earth, which before stood out here, for fear of him made a veil of the sea and came to our hemisphere; and perhaps in order to escape from him that which appears on this side left here the empty space and rushed upwards). All citations and translations of Dante follow *The Divine Comedy*, trans. Charles S. Singleton, 3 vols. (Princeton, NJ: Princeton University Press, 1970–75).

10. Alexander, "Form," 44.
11. William F. Woods, "Symkyn's Place in the *Reeve's Tale*," *CR* 39 (2004): 18.
12. This detail does not appear to be in any known scientific source and is of considerable interest because it is entirely the poet's own: "neither Vitruvius nor Adelard refers to the unseen subaqueous impulses": Bennett, "*Book of Fame*," 79.
13. Marshall Clagett notes how in Italy this title was synonymous with Richard Swineshead, and "the whole technique of treating qualities and motion in the Merton manner became known as 'the calculations'": *The Science of Mechanics in the Middle Ages* (Madison: University of Wisconsin Press, 1959), 248. My summary of mechanics is largely indebted to Clagett's voluminous study on mechanics.
14. J. A. W. Bennett, *Chaucer at Oxford and at Cambridge* (Toronto: Oxford University Press, 1974), 62.
15. Robert Epstein, "Sacred Commerce: Chaucer's Friar and the Spirit of Money," in *Sacred and Profane in Chaucer and Medieval English Literature*, ed. Robert Epstein and William Robins (Toronto: University of Toronto Press, 2010), 139.
16. John E. Murdoch, "From Social into Intellectual Factors: An Aspect of the Unitary Character of Late Medieval Learning," in *The Cultural Context of Medieval Learning*, ed. John E. Murdoch and Edith D. Sylla (Dordrecht and Boston: D. Reidel, 1975), 288–9; 283.
17. Wolfgang Clemen, *Chaucer's Early Poetry*, trans. C. A. M. Sym (London: Methuen, 1963), 107.
18. Glending Olson, "Measuring the Immeasurable: Farting, Geometry, and Theology in the *Summoner's Tale*," *CR* 43 (2009): 414–27.
19. The paragraph is summarized from Edward Grant, *Science and Religion, 400 B.C. to A.D. 1550* (Westport: Greenwood, 2004), 217–18.
20. Edward Grant, *The Foundations of Modern Science in the Middle Ages* (Cambridge: Cambridge University Press, 1996), 99.
21. John E. Murdoch and Edith Sylla, "The Science of Motion," in *Science in the Middle Ages*, ed. David C. Lindberg (Chicago: University of Chicago Press, 1978), 221. A debate concerning the alteration of the Eucharist emerged and initiated what is known as the "succession of forms" theory.
22. Joseph E. Grennen notes that "conservatyf the soun" (847) is a construction similarly used by Burley: "Science and Poetry in Chaucer's *House of Fame*," *Annuaire Mediaevale* 8 (1967): 44. The Merton master Walter Burley was an opponent of Ockham and wrote the *Liber de vita et moribus philosophorum*, a possible source for the reference to Cato and the parable of the Greek philosopher in the *Miller's Tale* (l.3227–9 and 3457–61).
23. Edith D. Sylla, "Medieval Quantifications of Qualities: The 'Merton School,'" *Archive for History of Exact Sciences* 8 (1971): 15.
24. Walter Roy Laird, "Change and Motion," in *The Cambridge History of Science, Volume 2: Medieval Science*, ed. David C. Lindberg and Michael Shank (Cambridge: Cambridge University Press, 2013), 428.

25. Murdoch and Sylla, "Science of Motion," 233.
26. *Ibid.*, 248.
27. Edward Grant, *Physical Science in the Middle Ages* (Cambridge: Cambridge University Press, 1971), 56.
28. William Heytesbury, *Regule solvendi sophismata*, as quoted in Clagett, *Science of Mechanics*, 277; 270. Clagett slightly modifies a translation supplied by Ernest A. Moody. For a more detailed discussion of the famous Merton theorem, see my appendix.
29. Olson, "Measuring the Immeasurable," 419–20.
30. John Buridan, "Questions on the Eight Books of the Physics," in *Acutissimi philosophi reverendi Magistri Johannis Buridani . . .* (Paris, 1509; Frankfurt: Minerva, 1964), *Physics* 8.12. Translated in Clagett, *Science of Mechanics*, 533 (my italics); with the modification of A. Maier, *Zwei Grundprobleme der scholastischen Naturphilosophie*, 2nd ed. (Rome: edizioni di letteratura e storia, 1951), 209. Shiela Delany's footnote also mentions Buridan's example of projectile motion in connection to the eagle's lecture but does not investigate the significance: *Chaucer's House of Fame: The Poetics of Skeptical Fideism* (Chicago: University of Chicago Press, 1972), 74n5.
31. Quotation from Edith D. Sylla, who writes on the influence of Bradwardine's *On the Ratios*: "Medieval Concepts of the Latitude of Forms: The 'Oxford Calculators,'" *Archives d'histoire doctrinale et littéraire du moyen âge* 40 (1973): 260.
32. Edith D. Sylla, "Physics," in *Medieval Latin: An Introduction and Bibliographical Guide*, ed. Frank Anthony Carl Mantello and A. G. Rigg (Catholic University of America Press, 1996), 359.
33. For a careful analysis of the axiom, see James A. Weisheipl, "The Principle *Omne quod movetur ab alio movetur* in Medieval Physics," reprinted in *Nature and Motion in the Middle Ages*, ed. William E. Carroll (Washington, DC: Catholic University of America Press, 1985), 75–97. Previously published in *Isis* 56 (1965): 26–45.
34. This and all further quotations from Macrobius's work are taken from *Commentary on the Dream of Scipio*, trans. William Harris Stahl (New York: Columbia University Press, 1952), 229.
35. Chaucer's interest in the "causes" of motion also appears in his introduction to *A Treatise on the Astrolabe*. He writes, "The fourthe partie shal ben a theorike to declare the moevyng of the celestiall bodies with the causes" (88–9). This "theorike," concerning the "causes" of celestial mechanics, will follow technical instructions on the actual "practik" (70) of using an astrolabe, an instrument for tracking "the moevyng of the celestiall bodies." Chaucer later describes this "moevyng" as a function of two variables: space and time. He will provide us with a "table of the verrey moevyng of the mone from houre to houre every day [that is, time] and in every signe after thyn almenak [that is, position]" (91–3, emphasis mine). The *Astrolabe's* "fourthe partie" on the "causes" of celestial motion was, in fact, never written.

36. Quotation from Kathryn L. Lynch, *Chaucer's Philosophical Visions* (Cambridge: D.S. Brewer, 2000), 66. Steven F. Kruger also shows how the *House of Fame* "inquires repeatedly into causation, looking for the causes of dreams (1–58), of Dido's downfall (283, 369), of the dreamer's flight into the heavens (612, 1875, 1885), of the behavior of sound (747, 794, 796, 800, 815), and of Fame's decisions (1543, 1563)": "Imagination and the Complex Movement of Chaucer's *House of Fame*," *CR* 28 (1993): 120–2.
37. Macrobius, *Commentary*, 233.
38. *Ibid.*, emphasis mine.
39. Obrist, introduction to *Liber secretorum alchimie*, by Constantine of Pisa (Leiden: E. J. Brill, 1990), 49.
40. "Primo rectitudo rationis et secundo impetus passionis obvians ipsi rationi . . . Requiritur etiam ulterius ad continentiam et incontinentiam proprie acceptas efficacia seu valitudo quedam tam rationis quam passionis." (First, right reason and second, the impetus of a passion opposing that reason is required . . . One more thing is required for continence and incontinence properly understood: the efficacy or strength of both the reason and the passion). Joan Cadden quotes Buridan's *Questiones super decem libros Ethicorum Aristotelis ad Nicomachum* (Paris: Poset Le Preux, 1513; repr., Frankfurt: Minerva, 1968), bk. 7, q. 4, 141va–b. My discussion of Buridan is indebted to Cadden's recent book *Nothing Natural Is Shameful: Sodomy and Science in Late Medieval Europe* (Philadelphia: University of Pennsylvania Press, 2013), 168–9; 275n106.
41. Cadden, *Nothing Natural*, 168.
42. Macrobius, *Commentary*, 242–3.
43. *Ibid.*
44. Steven F. Kruger paraphrases John M. Fyler: "Chaucer, in evoking Boethius, not only calls to mind 'the soul's ability, using the wings of Philosophy, to ascend beyond the elements and reach its proper home,' but also 'glaringly marks off the modest limits of his own journey by cutting Boethius off in mid-sentence'" ("Complex Movement," 126); John M. Fyler, "'Cloude,'—'And Al That Y of Spak': The House of Fame, v. 978," *Neuphilologische Mitteilungen* 87 (1986): 565–8.
45. Kruger, "Complex Movement," 120.
46. Macrobius, *Commentary*, 243.
47. Moreover, the simultaneous motions of oppositions (i.e., the crest and trough of the wave) are analogous to the way "fals and soth compounded / Togeder fle for oo tydyng" (2108–9).
48. See Lynch, *Philosophical Visions*, 76. Lynch's analysis of Fame concludes that her logic is in fact dependent on circumstance. Logic permits "as-of-now" inferences, whereas "truth is relative to time" and "realities outside the inference" (77). In particular, Lynch considers "a special 'three-valued' logic, which adds to the values of true and false an intermediate value of neuter" (75). Her analysis of logic in the poem relies in part on the ideas of William of Ockham.

49. *Tractatus commensurabilitate vel incommensurabilitate motuum celi*. The particular ending of this treatise is mentioned in Kruger, "Complex Movement," 131.
50. See, for example, Kruger, "Complex Movement," 126; the alternate explanation of "the air so thikke" once again "obscures revelation."
51. V. A. Kolve makes an important observation that as this narration proceeds, "one no longer knows whether we are to understand 'engraved with letters' or 'with pictures' . . . this redaction of the *Aeneid* begins with words on brass and ends with pictures, perhaps on brass, perhaps on glass, perhaps painted on the wall": *Chaucer and the Imagery of Narrative* (London: Edward Arnold, 1984), 41–2.
52. Woods, "Symkyn's Place," 17; 24.
53. Julian of Norwich, *A Book of Showings to the Anchoress Julian of Norwich, Part Two: The Long Text*, ed. Edmund Colledge and James Walsh (Toronto: Pontifical Institute of Mediaeval Studies, 1978), Chap. 5, 299–300.
54. Bennett, "Book of Fame," 166.
55. Britton J. Harwood, "Chaucer on 'Speche': *House of Fame*, the *Friar's Tale*, and the *Summoner's Tale*," *CR* 26 (1992): 345.
56. See Piero Boitani, *Chaucer and the Imaginary World of Fame* (Cambridge: D.S. Brewer, 1984), 190–1; Bennett, "Book of Fame," 178. B. G. Koonce also calls it the "cage of the world": *Chaucer and the Tradition of Fame: Symbolism in "The House of Fame"* (Princeton, NJ: Princeton University Press, 1966), 245–8.
57. Edward Grant, "Cosmology," in *The Cambridge History of Science, Volume 2: Medieval Science*, ed. David C. Lindberg and Michael H. Shank (Cambridge: Cambridge University Press, 2013), 2:446.
58. Ptolemy, *Almagest*, 1.7, as quoted in *A Source Book in Medieval Science*, ed. Edward Grant (Cambridge, MA: Harvard University Press, 1974), 495.
59. North, *Chaucer's Universe*, 15.
60. See Grant, *Physical Science*, 64.
61. Thomas Aquinas, *Commentaria in libros Aristotelis De caelo et mundo*, Lib. 2, cap. 8, Lectio 11, in *Sancti Thomae Aquinatis Opera Omnia iussu impensaue Leonis XIII*, 18 vols. (Rome, 1886), 3:218–21. Translation quoted in Grant, *Source Book*, 499.
62. Nick Havely and Helen Phillips, *Chaucer's Dream Poetry* (New York: Longman, 1997), 121.
63. John Buridan, *Quaestiones super libris quattuor De caelo et mundo*, ed. E. A. Moody (Cambridge, MA: The Mediaeval Academy of America, 1942), 226–32. Translation from Clagett, *Science of Mechanics*, 501; Augustine, in *The Trinity*, refers to a similar optical illusion when "towers on the land seem to men on shipboard to be in motion": Augustine, *Augustine: Later Works*, trans. John Burnaby, vol. 8 (Philadelphia: Westminster Press, 1955), 8:149.
64. Macrobius, *Commentary*, 228.
65. Nicole Oresme, *Le Livre du ciel et du monde*, ed. Albert D. Menut and Alexander J. Denomy and trans. Albert D. Menut (Madison: University

- of Wisconsin Press, 1968) 2.25.139c. All citations and translations from Oresme are drawn from this edition (cited by book, chapter, and folio number).
66. See Claggett, *Science of Mechanics*, 591; Murdoch and Sylla, "Science of Motion," 75. This doctrine forcibly required "students and teachers at the University of Paris to concede that by virtue of his absolute power, God could create as many worlds as he pleased beyond ours": Grant, *Science and Religion*, 197.
 67. Grant, *Science and Religion*, 197–9.
 68. As North aptly points out, "There is no clear geometrical way of representing such a location!" (*Chaucer's Universe*, 18).
 69. Russell A. Peck, "Chaucer and the Nominalist Questions," *Speculum* 53 (1978): 745–60, cites Thomas Usk, *Testament of Love* 3.4, *Chaucerian and Other Pieces*, ed. W. W. Skeat (Oxford: Clarendon, 1897), 123. Deschamps's ballade mentions "O Socratès plains de philosophie": Caroline F. E. Spurgeon, *Five Hundred Years of Chaucer Criticism and Allusion 1357–1900*, 3 vols. (Cambridge: Cambridge University Press, 1925), 1:22; Thomas Hoccleve in his *Regiment of Princes* writes, "Also, who was hier in philosophie / To Aristotle, in our tonge, but thow?" (lines 2087–8) and calls Chaucer a "universal fader in science." On the philosophical references to Chaucer, see Alastair Minnis's chapter, "The Parliament of Fowls," in *Chaucer's Shorter Poems* (Oxford: Clarendon, 1995).
 70. Quotation from Shakespeare, *The Merchant of Venice*, ed. M. M. Mahood (Cambridge: Cambridge University Press, 2003).
 71. "The House of Fame, in other words, offered much that Shakespeare might have found sympathetic in 1598": Catherine Belsey, "William and Geoffrey," in *Shakespeare Without Boundaries: Essay in Honor of Dieter Mehl*, ed. Christa Jansohn, Lena Cowen Orlin, and Stanley Wells (Newark: University of Delaware Press, 2010), 181–2.
 72. Olson, "Measuring the Immeasurable," 422.
 73. Malcolm Andrew and Ronald Waldron, eds., *The Poems of the Pearl Manuscript: Pearl, Cleanness, Patience, Sir Gawain and the Green Knight*, rev. ed. (Berkeley: University of California Press, 1996).
 74. "Since there is a wide variety of customs in the world, what one race approves of may be condemned by another": Minnis, "The Parliament of Fowls," 189.
 75. Macrobius, *Commentary*, 151.
 76. Holley, *Reason and Imagination*, 56.
 77. *Ibid.*, 64.
 78. A. C. Spearing, "Dream Poems," in *Chaucer: Contemporary Approaches*, ed. Susanna Fein and David Raybin (University Park: Pennsylvania State University Press, 2010), 175.
 79. I am indebted to Nicolette Zeeman for pointing my attention to self-motion in this context.

3 Alchemical Allegory and Transformative Action in the *Franklin's Tale*

1. Joseph E. Grennen, "Saint Cecilia's 'Chemical Wedding': The Unity of the *Canterbury Tales*, Fragment VIII," *JEGP* 65 (1966): 467.
2. More recently, Jennifer L. Sisk points out the parallel notions of "nostalgic idealism" that connect the analogous performances between the Nun and the Yeoman, and, more generally, medieval alchemy to "a central strain of religious reformist thinking": "Religion, Alchemy, and Nostalgic Idealism in Fragment VIII of the *Canterbury Tales*," *SAC* 32 (2010): 171.
3. For the argument that the tale of the false Canon is an earlier work, see Albert E. Hartung, "Pars Secunda and the Development of the 'Canon's Yeoman's Tale,'" *CR* 12 (1977): 111–28. This earlier dating of the tale's *Pars Secunda* was also put forth by John M. Manly, *Some New Light on Chaucer* (New York: Henry Holt, 1926), 235–52.
4. Ann W. Astell, *Chaucer and the Universe of Learning* (Ithaca and London: Cornell University Press, 1996), 120.
5. Eric Weil, "An Alchemical Freedom of Flight: Linking the Manciple's Tale to the Second Nun's and Canon's Yeoman's Tales," *Medieval Perspectives* 6 (1991): 163.
6. Mark J. Bruhn, "Art, Anxiety, and Alchemy in the Canon's Yeoman's Tale," *CR* 33 (1999): 288.
7. Paul B. Taylor, "The Alchemy of Spring in Chaucer's *General Prologue*," *CR* 17 (1982): 2–3.
8. For a discussion on Bonus's reference to Ovid, see Lynn Thorndike, *History of Magic and Experimental Science* (New York: Columbia University Press, 1923), 3:155. Like many writings attributed to Arnald of Villanova, "The Precious New Pearl" of Petrus Bonus (Pietro Buono), written in the province of Istria, likens alchemical processes to principles of medieval Christian doctrine. Significantly, Lawrence M. Principe draws attention to the meaning of the given title in relation to the parable of the merchant in Mt 13:45–6, and such "linkages enhance the status of alchemy by transforming it into a kind of *holy* knowledge": *Secrets of Alchemy* (Chicago: University of Chicago Press, 2012), 68. See Pietro Bona de Ferrara, *Preziosa Margarita Novella*, ed. Chiara Crisciani (Florence: Nuova Italia Editrice, 1976). For a translation, see Petrus Bonus, *The New Pearl of Great Price*, trans. Arthur Edward Waite (London, 1894; repr., London: Arno Press, 1974).
9. Astell, *Universe of Learning*, 133.
10. Will H. L. Ogrinc, "Western Society and Alchemy from 1200 to 1500," *Journal of Medieval History* 6 (1980): 128n9. Ogrinc's footnote also cites the *Exempla de arte philosophorum* found in E. E. Ploss, et al., "Alchemia," *Ideologie und Technologie* (Munich: Moos, 1970). See also Pseudo-Arnald of Villanova, *Tractatus parabolicus*, ed. and trans. [into French] Antoine Calvet, *Chrysopoieia* 5 (1992–96): 160.

11. Jacqueline Tasioulas, "Science," in *Chaucer: An Oxford Guide*, ed. Steve Ellis (Oxford: Oxford University Press, 2005), 187.
12. Chaucer's borrowing of the "donum Dei" motif (though commonplace in the treatises) is likely taken from the *Epistola solis ad lunam crescentem* (i.e., the "book Senior" in line 1450): "Laudate Dominum, cujus nomina sanctificentur, super hoc quod dignatur ei tribuere, & inspiravit ei conjunctionem hujus rei occultae, & sic post multas investigationes, & vigiliis continuas hujus rei occultae, & revelationis occultorum dictorum, adeptus sum lapidem" (184; Praise the Lord, whose name we sanctify; concerning this he deigns it worthy to assign to some, and he inspires the solution to this secret thing in man, after many investigations, and constant vigils concerning this secret thing, and of the revelation of secret words, having acquired this stone.) M. Turāb 'Ali, E. Stapleton, and M. Hidāyat Husain, eds., "Three Arabic Treatises on Alchemy by Muhammad ibn Umail (10th Century A.D.)," *Memoirs of the Asiatic Society of Bengal* (Kolkata) 12 (1933): 1–213. All subsequent Latin quotations of the *Epistola solis* are taken from this edition and are cited by page number.
13. George R. Keiser, "The Conclusion of the Canon's Yeoman's Tale: Readings and (MIS)Readings," *CR* 35 (2000): 1.
14. Bruce L. Grenburg distinguishes between false alchemy (i.e., material greed) from true alchemy, the quest to find God and the "adjuration to flee Fortune's lying promise of happiness through material goods": "The *Canon's Yeoman's Tale*: Boethian Wisdom and the Alchemists," *CR* 1 (1966): 38–9.
15. John M. Fyler, "Love and Degree in the *Franklin's Tale*," *CR* 21 (1987): 321–37; E. T. Donaldson, *Chaucer's Poetry*, 2nd ed. (New York: Ronald Press, 1975), 1087–90; Jill Mann, "Chaucerian Themes and Style in the *Franklin's Tale*," in *Medieval Literature: Chaucer and the Alliterative Tradition*, ed. Boris Ford (Harmondsworth: Penguin, 1982), 133–53; and more recently, see Cathy Hume, "'The Name of Soveraynetee': The Private and Public Faces of Marriage in *The Franklin's Tale*," *Studies in Philology* 105 (2008): 284–303. Kathryn Jacobs believes the marriage of Arveragus and Dorigen "serves as a model, an incipient ideal society, for the pilgrims and Chaucer's audience at large as well as for Aurelius and the clerk." She adds, "The mutual submission of the couple in marriage, then, soon evolves into a wholesale advocacy of that generosity and self-denial and loyalty in all human relations which comprise the code of 'gentil-lesse.':" "The Marriage Contract of the *Franklin's Tale*: The Remaking of Society," *CR* 20 (1985): 140–42. Critics who seem to espouse a more cynical reading include, for example, Angela Jane Weisl, *Conquering the Reign of Femeny: Gender and Genre in Chaucer's Romance* (Cambridge: D.S. Brewer, 1995).
16. Angela Lucas, "Astronomy, Astrology, and Magic in Chaucer's *Franklin's Tale*," *Maynooth Review* 8 (1983): 10.
17. John Lydgate, *Lydgate and Burgh's Secrees of the old Philosophers*, ed. Robert Steele, EETS extra series 66 (London, Kegan Paul, 1894), 32. The

- printed text of Lydgate's own poetical rendition of the famous *Secreta secretorum* (Secret of Secrets) is that of British Museum Sloane MS 2464. Aristotle allegedly wrote this compendium of knowledge in the form of an exchange of letters in which his pupil, Alexander the Great, requests information on diverse topics. This particular passage is taken from the section on "How Aristotil declarith to kyng Alisaundre of the stoonys."
18. See Robert Halleux, *Les Alchimistes Grecs, vol. 1, Papyrus de Leyde Papyrus de Recettes Stockholm Fragments de Recettes* (Paris: Belles Lettres, 1981).
 19. Dorothee Metlitzki, *The Matter of Araby in Medieval England* (New Haven and London: Yale University Press, 1977), 11.
 20. *Ibid.*, 11.
 21. William R. Newman, *Promethean Ambitions: Alchemy and the Quest to Perfect Nature* (Chicago: University of Chicago Press, 2004), 43.
 22. Bruhn, "Art, Anxiety, and Alchemy," 292.
 23. Lee Patterson, "Perpetual Motion: Alchemy and the Technology of the Self," *SAC* 15 (1993): 49.
 24. Robert Epstein, "Sacred Commerce: Chaucer's Friar and the Spirit of Money," in *Sacred and Profane in Chaucer and Medieval English Literature*, ed. Robert Epstein and William Robins (Toronto: University of Toronto Press, 2010), 132. He quotes Lester K. Little, *Religious Poverty and the Profit Economy in Medieval Europe* (Ithaca, NY: Cornell University Press, 1978), 200.
 25. Thorndike, *History*, 3:76.
 26. Principe, *Secrets*, 68 (quoting John of Rupescissa, *De confectione veri lapidis philosophorum*, in *Bibliotheca chemica curiosa*, 2:81–2).
 27. Sisk, "Religion, Alchemy, and Nostalgic Idealism," 162.
 28. As we shall see, this recluse shares some likeness to the clerk of the *Franklin's Tale*, who is also found "romynge by hymself" (v.1173).
 29. Lee Stavenhagen, ed. and trans., *A Testament of Alchemy: Being the Revelations of Morienus, Ancient Adept and Hermit of Jerusalem to Khalid Ibn Yazid Ibn Mu'awiyya . . .* (Hanover, NH: Brandeis University Press, 1974), 26–9. See also Julius Ruska, *Arabische Alchemisten I: Chālid ibn-Jazīd ibn-Mu'āwija, Heidelberger Akten von—Porthheim-Siftung* 6 (1924; reprint, Vaduz, Liechtenstein: Sändig Reprint Verlag, 1977).
 30. Lee Stavenhagen, "The Original Text of the Latin Morienus," *Ambix* 17 (1970): 7.
 31. Stavenhagen, *Testament of Alchemy*, 63–5.
 32. Robert P. Multhauf, "The Science of Matter," in *Science in the Middle Ages*, ed. David C. Lindberg (Chicago and London: University of Chicago Press), 378.
 33. David C. Lindberg, *The Beginnings Western Science: The European Scientific Tradition in Philosophical, Religious, and Institutional Context, Prehistory to A.D. 1450*, 2nd ed. Chicago: University of Chicago Press, 2007, 291.
 34. See William R. Newman, "Art, Nature, Alchemy, and Demons: The Case of the *Malleus Maleficarum* and Its Medieval Sources," in *The Artificial and the Natural: An Evolving Polarity*, ed. Bernadette Bensaude-Vincent

- and William R. Newman (Cambridge: Massachusetts Institute of Technology Press, 2007), 123.
35. This summary analysis is a quotation from Edgar H. Duncan, "The Literature of Alchemy and Chaucer's Canon's Yeoman's Tale: Framework, Theme, and Characters," *Speculum* 43 (1968): 638.
 36. Carl Luke Phelpstead, "Th' ende is every tales strengthe': Contextualizing Chaucerian Perspectives on Death and Judgement," in *Chaucer and Religion*, ed. Helen Phillips (Cambridge: D.S. Brewer, 2010), 105; quoting Paul Binski, *Medieval Death: Ritual and Representation* (London, 1996), 24.
 37. L. DeVun, *Prophecy, Alchemy, and the End of Time: John of Rupescissa in the Late Middle Ages* (New York: Columbia University Press, 2009), 61.
 38. Ogrinc, "Western Society," 126–7 (emphasis mine).
 39. *Ibid.*, 118–19.
 40. *Ibid.*, 119; 126; Ogrinc cites J. Pettus, *Fodinae Regales, or, the History, Laws and Places of the Chief Mines and Mineral Works in England, Wales, and the English Pale in Ireland* (London, 1670).
 41. Pope John XXII, *De Crimine Falsi Titulus VI. I Joannis XXII*, accessed January 7, 2014, <http://www.levity.com/alchemy/papalocr.html>. See also J. W. Spargo, *Sources and Analogues of The Canterbury Tales*, ed. W. F. Bryan and Germaine Dempster (Chicago: University of Chicago Press, 1941; repr., New York: Humanities Press, 1958), 691–2. According to the papal decretal, the use of alchemical gold is punishable by the forfeiture of real gold by the perpetrator (proportional to the counterfeit amount), which is then redistributed to the poor.
 42. There is even an alchemical work attributed to the Pope (published 1557). Thorndike also mentions the legend about the accumulation of 29,000,000 ducats at the time of John XXII's death (3:34).
 43. Ogrinc, "Western Society," 108–9; 124. See also *Lottimo commento della Divina Commedia, Testo inedito d'un contemporaneo di Dante*, ed. A. Torri (Pisa: Capurro, 1827).
 44. Ogrinc, "Western Society," 109. See Benvenuto da Imola, *Benvenuti de Rambaldis de Imola Comentum super Dantis Aldigherij Comoediam*, 2nd ed. (Florence: Barbèra, 1887).
 45. Martin Allen, *Mints and Money in Medieval England* (Cambridge: Cambridge University Press, 2012), 373–5.
 46. Christine Chism, "I Demed Hym Som Chanoun For to Be," in *Chaucer's Pilgrims: An Historical Guide to the Pilgrims in the "Canterbury Tales,"* ed. Laura C. Lambdin and Robert T. Lambdin (Westport, CT: Greenwood, 1996), 350 (cited by Sisk, "Religion, Alchemy, and Nostalgic Idealism," 163n35). Interestingly, Lawrence Principe notes, "Henry IV's 1404 statute against gold making was soon modified, in a very English way, by the awarding of licenses from the Crown to practice alchemy, on the condition that the precious metals produced were to be sold directly to the Royal Mint": Principe, *Secrets*, 62.
 47. Principe, *Secrets*, 62.

48. Allen, *Mints and Money*, 376.
49. See the *Riverside* (p. 883) and James Dean, "Time Past and Time Present in Chaucer's *Clerk's Tale* and Gower's *Confessio Amantis*," *ELH* 44 (1977): 401–17.
50. Duncan, "Literature of Alchemy," 645; 647.
51. W. Bryant Bachman, Jr., "'To Maken Illusioun': The Philosophy of Magic and the Magic of Philosophy in the *Franklin's Tale*," *CR* 12 (1977): 62.
52. Grennen, "Chemical Wedding," 475.
53. Recall that the Orléans clerk demands one thousand pounds of gold as payment for removing the rocks, and, in the end, Aurelius presents him with one-half of the total sum (five hundred pounds of gold), thus falling short of an *additional* five hundred pounds of gold. In other words, five hundred pounds of gold coins instantly appear before the philosopher. Chaucer's reference to pounds of weight probably refers to tower pounds or troy pounds, units of measurement used specifically for precious metals.
54. Bryan and Dempster, *Sources and Analogues*, 383.
55. Jonathan Hughes, *The Rise of Alchemy in Fourteenth-Century England* (London and New York: Continuum, 2012), 80; Hughes adds, "Merlin's greatest feat of alchemical conjunction was to bring together Uther Pendragon and Igraine to beget Arthur" (18). Interestingly, St John's College, Cambridge, MS G.14 (dated December 10, 1479) contains an alchemical speech attributed to King Arthur, "Arthurus" (fol. 120r).
56. William R. Newman, "Medieval Alchemy," in *The Cambridge History of Science, Volume 2: Medieval Science*, ed. David C. Lindberg and Michael H. Shank (Cambridge: Cambridge University Press, 2013), 2:397.
57. Ogrinc, "Western Society," 109.
58. Carolyn P. Collette, "Seeing and Believing in the 'Franklin's Tale,'" *CR* 26 (1992): 408.
59. Duncan's essay draws attention to blindness in the *Canon's Yeoman's Tale* and the ways in which Chaucer moves from "the blindness of the gulled priest to the blindness of all workers in alchemy" ("Literature of Alchemy," 650–1).
60. Chauncey Wood, "Of Time and Tide in the Franklin's Tale," *Philological Quarterly* 45 (1966): 691.
61. Anthony E. Luengo, "Magic and Illusion in *The Franklin's Tale*," *JEGP* 77 (1978): 1–16.
62. Mary Flowers Braswell, "The Magic of Machinery: A Context for Chaucer's *Franklin's Tale*," *Mosaic* 18 (1985): 101–10. See also V. A. Kolve's discussion on the contraptions and automata at the Count of Artois's Pavilion in the noble park at Hesdin: "Rocky Shores and Pleasure Gardens: Poetry vs. Magic in Chaucer's Franklin's Tale," in *Poetics: Theory and Practice in Medieval English Literature*, ed. Piero Boitani and Anna Torti (Cambridge: D.S. Brewer, 1991), 181–4.
63. Kolve, "Rocky Shores," 189.

64. Florence M. Grimm, *Astronomical Lore in Chaucer* (1919; repr., New York: AMS Press, 1970), 41.
65. Jamie C. Fumo, "Aurelius's Prayer, *Franklin's Tale* 1031–70: Sources and Analogues," *Neophilologus* 88 (2004): 628.
66. For a discussion of "the part astrology frequently played in alchemical theory and imagery," see P. G. Maxwell-Stuart, *The Chemical Choir: A History of Alchemy* (New York: Continuum, 2008), 78.
67. Ogrinc, "Western Society," 104.
68. John Gower, *Confessio Amantis*, ed. G. C. Macaulay, EETS extra series 81 (Oxford: Clarendon Press, 1899–1902; repr., Oxford: Oxford University Press, 1969), 367–8.
69. See the *Riverside*, 825. Hilary cites Bartholomaeus Anglicus 16.5, trans. Trevisa, 2.830.
70. Stavenhagen, *Testament of Alchemy*, 20–1; 32–3. In general, laton refers to brass, an alloy with the correct color of gold but not its stability and freedom from corrosion. Hence, the claim is that brass—which tarnishes—can be cleansed to remove this property to provide gold.
71. Titus Burckhardt, *Alchemy: Science of the Cosmos, Science of the Soul*, trans. William Stoddart (Baltimore, MD: Penguin, 1972), 76–7.
72. Peter Marshall, *The Philosopher's Stone* (London: Pan Macmillan, 2001), quoted in Hughes, *Rise of Alchemy*, 15.
73. F. Sherwood Taylor, *The Alchemists: Founders of Modern Chemistry* (New York: Schuman, 1949), 97 (cited by Patterson, "Perpetual Motion," 43).
74. Albertus Magnus, *Book of Minerals*, trans. Dorothy Wyckoff (Oxford: Clarendon, 1967), 170; For the Latin text, see Albertus Magnus, *Opera omnia*, ed. Auguste Borgnet (Paris, 1890–99), 5:3.1.6 (p. 67).
75. See Barbara Obrist's introductory notes to Constantine of Pisa, *The Book of the Secrets of Alchemy [Liber secretorum alchimie]*, ed. and trans. Barbara Obrist (New York: E.J. Brill, 1990), 34.
76. Albertus is paraphrased by Maxwell-Stuart, *Choir*, 57.
77. Early Latin translators of the famous *Emerald Tablet* also advise alchemists to operate under favorable astrological conditions. See Robert Steele and Dorothea Waley Singer, "The Emerald Table," *Proceedings of the Royal Society of Medicine* 21 (1927): 43. Also, Nicolas Oresme (d. 1382) directly associates alchemy with the divinatory powers of astrology in his *Livre de Divinations*: Noel L. Brann, "Alchemy and Melancholy in Medieval and Renaissance Thought: A Query into the Mystical Basis of Their Relationship," *Ambix* 30 (1985): 127.
78. Constantine, *Liber secretorum alchimie*, 73; 236.
79. Constantine, *Liber secretorum alchimie*, 79; 75; 238.
80. Barbara Obrist cites Albertus's *De causis et proprietatibus elementorum*, 1.2.7, on "what Albert the Great says about the alchemists of his time: it was a general habit among them to work according to lunations" (Constantine, *Liber secretorum alchimie*, 35; emphasis mine).
81. Constantine, *Liber secretorum alchimie*, 79.
82. *Ibid.*, 77; 240 (emphasis mine). Obrist's translation slightly modified.

83. Fumo, "Aurelius' Prayer," 623.
84. Robert B. Burlin, "The Art of Chaucer's Franklin," *Neophilologus* 51 (1967): 69–70; Fumo, "Aurelius' Prayer," 630.
85. Another analogue to this form of prayer surfaces in the *mock*-religious pleadings of courtly lovers in the romances of Chrétien de Troyes, such as *Le Chevalier de la Charrette*. When Lancelot visits the queen at her bedside, he kneels before the lady whom he adores and cherishes more than any saint's relic: "Devant elle il s'incline et l'adore / car il ne croit pas autant aux plus saintes reliques" (lines 4686–7). When he is pressed to leave her in the morning, he is in such pain that he suffers a genuine martyr's agony—"Car il I suefre grant martire" (line 4691). But it comforts Lancelot that his fingers drip with blood and stain the sheets (i.e., he wounds his hands when he removes the iron bars of her window). See Chrétien de Troyes, *Le Chevalier de la Charrette* (Paris: Livre de Poche, 1992), 322–4.
86. Chaucer here confusingly replaces the voice of Solomon with Plato, and for this reason, Duncan suggests that Chaucer might have used a thirteenth-century English manuscript such as Trinity College, Cambridge, MS O.2.18, in which a contemporary hand annotates "Dixit Senior" (fol. 39r) with "i. Plato": 653–4. See also figure 3.2 and my discussion of the *Epistola* in chapter 4.
87. Dorothee Metlitzki, "Scientific Imagery in Chaucer," in *Chaucer's Cultural Geography*, ed. Kathryn Lynch (New York and London: Routledge, 2002), 141. See also Muhammad ibn Umail, "Senioris Zadith fil. Hamuelis Tabula Chemica," in *Theatrum Chemicum*, ed. Lazarus Zetzner, 3rd ed. (Strasbourg: Zetzner, 1659–61). As I stated earlier, all Latin quotations of the text are taken from Turāb 'Alī, Stapleton, and Husain's edition.
88. We are told repeatedly by early writers how the profound secrets of Egyptian learning were preserved on the columns or steles of their temples.
89. Fumo, "Aurelius' Prayer," 626.
90. Grennen, "Chemical Wedding," 467; 469.
91. Metlitzki, *Araby*, 84.
92. Maxwell-Stuart, *Choir*, 74.
93. Quotation from Patterson, "Perpetual Motion," 44.
94. From the *Visio arislei* at the end of the *Turba philosophorum*. For a discussion of *Arislei* in the context of the *Canon's Yeoman's Tale*, see Metlitzki, "Scientific Imagery," 140.
95. Thorndike, *History*, 3:98. Thorndike is citing Ashmole 1416, fol. 85v. Alchemical treatises often take the form of an allegorical debate. In the Latin translation of al-Razi's *De aluminibus et salibus*, for example, the allegorical figures of mercury and gold exchange words in a dialogue.
96. Grimm, *Astronomical Lore*, 49.
97. Similarly, the Wife of Bath informs us that her ascending sign at birth was Taurus (a domicile of Venus) with "Mars therinne" (III.613).

98. For a discussion of lunar symbolism, see Richard Kay, *Dante's Christian Astrology* (Philadelphia: University of Pennsylvania Press, 1994), 24.
99. The imagery of the Lion (*Leo*) also appears in the commentary portion of the *Epistola solis*, 170–1.
100. Julius Ruska, ed., *Turba Philosophorum: Ein Beitrag zur Geschichte der Alchemie* (Berlin: Springer, 1931), 164. All subsequent quotations of the *Turba* are taken from this edition. The translations, slightly modernized, are taken from A. E. Waite, trans., *The Turba Philosophorum* (York Beach, ME: Samuel Weiser, 1970), 184 (emphasis mine).
101. Alternatively, Albertus Magnus claims that the word “alchemy” is derived from the Greek *archymo*, which in Latin is *massa* (a lump or mass).
102. Chism, “I Demed Hym,” 348.
103. Thorndike is paraphrasing Dastin and adds: “In springtime the heat of the sun is gentle so that it does not burn up the tender herbs as they begin to grow. But as the sun passes from Aries to Gemini and then to Leo, its heat increases”: *History*, 3:94; 625.
104. See Multhauf, “Science of Matter,” 381.
105. Though it is doubtful if Chaucer knew this text, it is certainly representative of a large category of texts in the alchemical *opus*, which combine alchemical mysticism with biblical allegory. Thomas Aquinas [pseudo], *Aurora Consurgens: A Document Attributed to Thomas Aquinas on the Problem of Opposites in Alchemy*, ed. Marie-Louise von Franz, trans. R. F. C. Hull and A. S. B. Glover (New York: Pantheon, 1996), 133n2. Translations are slightly modernized.
106. “firmam petram, quae non potest scindi nisi . . . vel percutiatur virga mosaica ter, ut aquae effluent largissimae” (Ibid., 102).
107. “Deinde via est in mari rubro sine impedimento, quoniam hoc mare magnum et spatiosum percussit petram et effluerunt aquae (metalinae)” (Ibid., 126).
108. Von Franz also notes relevant passages from the Bible: Ps. 104.41, Isa. 48.21, Num. 20.11, and Exod. 17.6 (see Aquinas [pseudo], *Aurora Consurgens*, 103n13; 127n28).
109. “Pearce the Black Monk upon the Elixir,” in George Ripley, *The Compound of Alchemy (1470–71)*, ed. Elias Ashmole, in *Theatrum Chemicum Britannicum: Containing Severall Poeticall Pieces . . .* (London, 1652; repr., Hildesheim: Georg Olms, 1968), 271 (also cited by Patterson, “Perpetual Motion,” 43n50).
110. Albertus Magnus, *Minerals*, 178–9. In the Borgnet edition, 5:3.1.9 (p. 71).
111. “The great deities of this long and rotund prayer (1031–79) are really only figures of physical nature”: John P. McCall, *Chaucer among the Gods: The Poetics of Classical Myth* (University Park and London: Pennsylvania State University Press, 1979), 133; 135.
112. George Lyman Kittredge, *Chaucer and His Poetry* (Cambridge, MA: Harvard University Press, 1915), 185–211; quotation from Paul Beekman

- Taylor, *Chaucer's Chain of Love* (Cranbury, NJ: Fairleigh Dickinson University, 1996), 94.
113. Steele Nowlin, "Between Precedent and Possibility: Liminality, Historicity, and Narrative in Chaucer's *The Franklin's Tale*," *SP* 103 (2006): 61.
 114. Lindsay A. Mann, "'Gentilesse,' and the Franklin's Tale," *SP* 63 (1966): 12; 23.
 115. Collette, "Seeing," 397.
 116. Constantine, *Liber secretorum alchimie*, 99; 264.
 117. Aquinas [pseudo], *Aurora Consurgens*, 114–16.
 118. Thorndike, *History*, 3:114.
 119. Mann, "Chaucerian Themes," 139–40.
 120. Mann argues, "static formulae...are inappropriate to human beings, since they are subject to change from within and chance from without" (*Ibid.*, 152).
 121. Fyler, "Love and Degree," 329.
 122. Kolve, "Rocky Shores," 168–9.
 123. Charles Owen, Jr., "The Crucial Passages in Five of the *Canterbury Tales*: A Study in Irony and Symbol," *JEGP* 52 (1953): 295–7.
 124. Collette, "Seeing," 407.
 125. Joseph D. Parry, "Dorigen, Narration, and Coming Home in the *Franklin's Tale*," *CR* 30 (1996): 264.
 126. Susan Crane, "The Franklin as Dorigen," *CR* 24 (1990): 247.
 127. Brann, "Alchemy and Melancholy," 128. Specific quotations follow parenthetically.
 128. Marie-Louise von Franz, *Alchemy: An Introduction to the Symbolism and the Psychology* (Toronto: Inner City Books, 1980), 174.
 129. A host of clerical writers used "elaborate biblical allegories to describe the mysterious workings of the alchemical *opus*, often comparing the mystical aspects of alchemy to the central mysteries of Christianity": Sisk, "Religion, Alchemy, and Nostalgic Idealism," 161.
 130. See von Franz's commentary in Aquinas [pseudo], *Aurora Consurgens*, 242.
 131. Nowlin, "Between Precedent and Possibility," 62.
 132. Donaldson, *Chaucer's Poetry*, 1089; Gertrude M. White, "The Franklin's Tale: Chaucer or the Critics," *PMLA* 89 (1974): 454–62. Moreover, as Fyler opines, the garden's Edenic associations "suggests real possibilities for regeneration and renewal": "Love and Degree," 332; 333.
 133. Gerhard Joseph, "The *Franklin's Tale*: Chaucer's Theodicy," *CR* 1 (1966): 30.
 134. Grenburg, "Boethian Wisdom and the Alchemists," 38.
 135. Leah Otis-Cour, "True Lover/False Lover, *franquise/dete*: Dichotomies in the *Franklin's Tale* and Their Analogue in Richard de Fournival's *Consaus d'amours*," *CR* 47 (2012): 185.
 136. Stavenhagen, *Testament of Alchemy*, 10–11.

137. *A Source Book in Medieval Science*, ed. Edward Grant (Cambridge, MA: Harvard University Press, 1974), 585. See also Zetzner, *Theatrum Chemicum*, 5:680 and Thorndike, *History*, 3:162.
138. David Alexander, "Dante and the Form of the Land," *Annals of the Association of American Geographers* 76 (1986): 38–49.
139. The question becomes, "if the center of the world were also that of the universe and the point all elements strove to reach, why should the lighter element water not lie on top of the heavier element earth?" (Ibid., 45).
140. Ibid., 47.
141. Bachman, "To Maken Illusioun," 62.
142. Quotation from Edward Grant, *The Foundations of Modern Science in the Middle Ages* (Cambridge: Cambridge University Press, 1996), 82.
143. Aquinas, *De Potentia*, 5.1, in *On the Power of God*, trans. English Dominican Father (Westminster, MD: Newman Press, 1952). See also James F. Ross, "Aquinas on Annihilation," in *Studies in Medieval Philosophy* 17, ed. John F. Wippel (Washington, DC: Catholic University of America Press, 1987).
144. Thorndike, *History*, 3:8. Also, Albertus Magnus draws heavily from Aristotle's *Physics* for his discussion of alchemy in the *Liber mineralium*.
145. Ogrinc, "Western Society," 104.
146. Lucas, "Astronomy, Astrology, and Magic," 8.
147. Thorndike, *History*, 3:55.
148. Principe, *Secrets*, 73.
149. The passage can be found in BU 7162, fol. 44v (cited in Thorndike, *History*, 3:62).
150. By way of example, "sunt flores quos nominaverunt secundum similitudinem flores lignorum, videlicet flores lapidis, qui sunt anima" (165; there are flowers which they called wooden flowers because of a similarity, and clearly flowers of stone, which are the soul). See also 161–2.
151. Joseph, "Chaucer's Theodicy," 27.
152. Guillaume de Lorris and Jean de Meun, *Le Roman de la Rose*, ed. Ernest Langlois 5 vols., SATF (Paris: Firmin-Didot (vols. 1–2) and Champion (vols. 3–5), 1914–24). For the translation, see Guillaume de Lorris and Jean de Meun, *The Romance of the Rose*, trans. Charles Dahlberg, 3rd ed. (Princeton, NJ: Princeton University Press, 1995).
153. Chaucer also incorporates Jean de Meun's alchemy in the *Squire's Tale*: the description of the magic mirror, made from the ashes of ferns, and the reference to thunder are lines drawn from the *Roman* (4.16096–105).
154. Mary R. Bowman, "'Half as She Were Mad': Dorigen in the Male World of the *Franklin's Tale*," *CR* 27 (1993): 241.
155. Hume, "The Name of Soveraynetee," 302.
156. The Parson glosses the story of woman's creation in Genesis in terms of reciprocity and parity, saying, "God ne made nat womman of the foot of Adam, for she ne sholde nat been holden to lowe. . . . but God made woman of the ryb of Adam, for womman sholde be felawe unto man" (x.928): Otis-Cour, "True Lover/False Lover," 164.

157. Jacobs, "Marriage Contract," 136.
158. Donaldson, *Chaucer's Poetry*, 1089.
159. Interestingly, the Franklin's description of the changing hues of the sun, which now "shoon ful pale" (v.1249), anticipates Dorigen's own pale-faced expression.
160. Craig R. Davis, "A Perfect Marriage on the Rocks: Geoffrey and Philippa Chaucer and the *Franklin's Tale*," *CR* 37 (2002): 141.
161. Robert Cook, "The Canon's Yeoman and His Tale," *CR* 22 (1987): 30.
162. J. S. P. Tatlock and P. Mackaye note that Dorigen's name likely derives from *Droguen*, the name of one of the most prominent stones off the coast of Brittany: *The Scene of The Franklin's Tale Visited* (London: K. Paul, Trench, Trübner, 1914), 37–41.

4 "As licour out of a lambyc ful faste": Love and Alchemy in *Troilus and Criseyde*

1. All citations are taken from Guillaume de Lorris and Jean de Meun, *Le Roman de la Rose*, ed. Ernest Langlois, 5 vols., SATF (Paris: Firmin-Didot (vols. 1–2) and Champion (vols. 3–5), 1914–24). For the translation, see Guillaume de Lorris and Jean de Meun, *The Romance of the Rose*, trans. Charles Dahlberg, 3rd ed. (Princeton, NJ: Princeton University Press, 1995).
2. Despite the ambiguity of Gaston Paris's invented expression "amour courtois," I understand medieval *fine amor* to mean "perfect" or "pure" love. Of course, Jean explicitly draws attention to the distillation of matter within the context of another medieval process of purification, *fine amor*. As Corinne Saunders notes, "this more fluid term [*fine amor*] can seem to indicate a defined set of attitudes, conventions and rituals of love of a more fixed kind than the actuality of medieval writing may suggest, and a more sustained, idealized treatment of emotion": "Love and the Making of the Self: *Troilus and Criseyde*," in *A Concise Companion to Chaucer*, ed. Corinne Saunders (Oxford: Blackwell, 2006), 137. For an insightful discussion on the problematic nature of these terms, see Jill Mann's article, "Falling in Love in the Middle Ages," in *Traditions and Innovations in the Study of Medieval English Literature: The Influence of Derek Brewer*, ed. Charlotte Brewer and Barry Windeatt (Cambridge: Cambridge University Press, 2013), 88–110.
3. "Baleries, dances e tresches / De beles dames bien parees, / Bien pourtraites, bien figurees, / Seit en metal, en fust, en cire, / Seit en quelconque autre matire, / Seit en tableaux, seit en pareiz, / Tenanz beaus bachelers a reiz, / Bien figurez e bien pourtraiz; / Ja pour figures ne pour traiz / Ne les fera par aus aler, / Vivre, mouveir, sentir, paler. / Ou d'alkimie tant apreigne / Que touz metauz en couleur teigne, / Qu'el se pourrait anceis tuer / Que les especes transmuer, / Se tant ne

- fait qu'el les rameine / A leur matire prumeraine" (*Roman*, 4.16054–70; balls, dances, and farandoles with beautiful and elegantly dressed ladies, well portrayed and well represented, either in metal, wood, wax, or any other material, in pictures or on walls, with the ladies holding handsome bachelors, also well represented and portrayed, in their nets—even so, Art, for all her representations and skillful touches, will never make them go by themselves, love, move, feel, and talk. She may learn so much about alchemy that she may dye all the metals in color—for she could kill herself before she could transmute the species, even if she did not go to the extent of taking them back to their prime matter.) This passage is followed by a scholastic debate on the topic of "Art" versus "Nature" in the context of alchemy.
4. Judith Scherer Herz, "The Canon's Yeoman's Prologue and Tale," *MP* 58 (1961): 235.
 5. *Ibid.*
 6. Michael A. Calabrese, "Meretricious Mixtures: Gold, Dung, and the Canon's Yeoman's Prologue and Tale," *CR* 27 (1993): 277. Specifically, Calabrese analyzes a fourteenth-century poem, the *Antiovidianus*, in which Ovid's muse is shown to possess a kind of "alchemical power" to aurify dung and piss: "Nasonem mea musa ferit, quia stercora sumens / Auravit musa tam rutilante sua" (p. 279, lines 3–4; My muse strikes Ovid, because taking up dung, with his shining muse he made it gold).
 7. Richard Kieckhefer, *Magic in the Middle Ages*, Canto ed. (1989; repr., Cambridge: Cambridge University Press, 2000), 134. According to Aristotle, the terms *mixis* and *krasis* indicate the chemical process of combining two or more substances, at which point the starting materials cease to exist as a new, homogeneous substance emerges as the final product. In other words, the final product will be both chemically and physically different from the original reactants (i.e., chemical combination).
 8. This is not mere verbal alchemy that he uses in order to amalgamate the two lovers in mutual love, for Pandarus *physically* handles Troilus's body: "he into bed hym caste . . . And of he rente al to his bare sherte" (III.1097–9). Charles Muscatine pointedly remarks, "This is the first time in medieval literature that the go-between must go so far as actually to pick up the hero and throw him into the lady's bed": *Chaucer and the French Tradition* (Berkeley: University of California Press, 1957), 152.
 9. Larry Scanlon, "Sweet Persuasion: The Subject of Fortune in *Troilus and Criseyde*," in *Chaucer's Troilus and Criseyde: "Subgit to alle Poesye," Essays in Criticism*, ed. R. A. Shoaf (Binghamton, NY: Medieval and Renaissance Texts and Studies, 1992), 212.
 10. I am not suggesting that the voice of the narrator represents the perspective of a fully developed fictional character with a consistent view of the story. Rather, I will adopt A. C. Spearing's more flexible approach to a theory of narration in which "Chaucer's narratorial first person, which can give expression to different perspectives at different moments, and sometimes to no individual perspective at all": A. C.

- Spearing, "Time in *Troilus and Criseyde*," in *Traditions and Innovations in the Study of Medieval English Literature: The Influence of Derek Brewer*, ed. Charlotte Brewer and Barry Windeatt (Cambridge: Cambridge University Press, 2013), 63.
11. I am following up on Muscatine's hunch that in the conclusion "there is more support for a symbolic reading than for a psychological one" (*French Tradition*, 162).
 12. Mark J. Bruhn, "Art, Anxiety, and Alchemy in the Canon's Yeoman's Tale," *CR* 33 (1999): 308. See also Lee Patterson, "Perpetual Motion: Alchemy and the Technology of the Self," *SAC* 15 (1993): 25–57; Calabrese, "Meretricious Mixtures," 277–90.
 13. "Pandarus's awareness of [Troilus's] sweat is equaled in Chaucer only in the *Canon's Yeoman's Tale*": Muscatine, *French Tradition*, 142 (see II.939–44 in *Troilus*).
 14. Albertus Magnus, *Libellus de alchimia*, trans. Sister Virginia Heines, S. C. N. from the Borgnet Latin edition, foreword by Pearl Kibre (Berkeley: University of California Press, 1958), 27.
 15. Jill Mann, "Troilus' Swoon," *CR* 14 (1980): 322–3.
 16. Dorothee Metlitzki, *The Matter of Araby in Medieval England* (New Haven and London: Yale University Press, 1977), 83.
 17. Senior Zadith also makes reference to "lapis Aquilae" (the stone of the eagle): M. Turāb 'Ali, E. Stapleton, and M. Hidāyat Husain, eds., "Three Arabic Treatises on Alchemy by Muhammad ibn Umail (10th Century A.D.)," *Memoirs of the Asiatic Society of Bengal* (Kolkata) 12 (1933): 191. All subsequent Latin quotations of the *Epistola solis* are taken from this edition and are cited by page number. Also, the *Libellus de alchimia* provides instructions on how to make the "oil of the eagle [*oleum aquilae*]": Albertus Magnus, *Libellus*, 61n210.
 18. In tenth-century Egypt, "Sheikh" (*Senior*) Muhammad ibn Umail at-Tamimi as-Sadiq (ca. 900–60), known to the Christian West as "Senior Zadith filius Hamuel," composed an allegorical commentary on his own poem, the *Epistola solis*. Edgar H. Duncan suggests that Chaucer might have used a similar manuscript to Trinity College, Cambridge, MS O.2.18, which includes both the poem and commentary: Duncan, "The Literature of Alchemy and Chaucer's Canon's Yeoman's Tale: Framework, Theme, and Characters," *Speculum* 43 (1968): 653–4. The endnotes to the *Riverside* confirm, "From this fourteenth-century English manuscript we can see how Chaucer may have come by both Plato and his title for the work" (951). For the Latin edition of this text, see my note above.
 19. "Arcus in pedibus aquilarum potentiam & fortitudinem illarum indicant, & ipsius originis à principio usque ad finem" (196; The bows in the eagles' feet indicate their power and strength, and of their origin, all the way from the beginning to the end).
 20. Marie-Louise von Franz comments, "The eagles give me the impression of having a relation to Apollo for it is said that they can look at the sun, and of course Apollo has the bow, as has the winged boy Cupid... here

- the eagle is connected with Eros, or with Apollo, so the gods are projected onto the gods”: *Alchemy*, 116–18.
21. Lyndy Abraham, *A Dictionary of Alchemical Imagery* (Cambridge: Cambridge University Press, 1998).
 22. See also “toucheth swich matere” (II.1131), “as touchyng this matere” (III.432), “touchen naught of this matere” (v.996), and “touchyng al this matere” (v.1588).
 23. Albertus Magnus, *Book of Minerals*, trans. Dorothy Wyckoff (Oxford: Clarendon, 1967), 204; For the Latin text, see Albertus Magnus, *Opera omnia*, ed. Auguste Borgnet (Paris, 1890–99), 5:4.1; 83.
 24. Petrus Bonus, *Pretiosa margarita novella*, ed. James Lacinius (Venice: Aldus, 1546), 112. See also Thomas Aquinas [pseudo], *Aurora Consurgens: A Document Attributed to Thomas Aquinas on the Problem of Opposites in Alchemy*, ed. Marie-Louise von Franz, trans. R. F. C. Hull and A. S. B. Glover (New York: Pantheon, 1996), 125n18.
 25. “Et de illo cinere ascendit pluvia viva, & vivificans, quae descendit de coelo post exaltationem ad illud,” 191; “Pluvia est destillatio aquae eorum” (171); “Sed quando ingressae sunt tincturae, & pluerunt pluvia de coelo,” 160; “ex eo ascendit nubes eorum & pluvia,” 179.
 26. Jill Mann, “Chance and Destiny in *Troilus and Criseyde* and the *Knight’s Tale*,” in *The Cambridge Companion to Chaucer*, ed. Piero Boitani and Jill Mann (Cambridge: Cambridge University Press, 2004), 104.
 27. Constantine of Pisa, *The Book of the Secrets of Alchemy [Liber secretorum alchimie]*, ed. and trans. Barbara Obrist (New York: E.J. Brill, 1990), 79; 242.
 28. *Ibid.*, 78–9; 241.
 29. *Ibid.*, 87; 251.
 30. “Mulier solvit virum et ipse figit eam, hoc est spiritus solvit corpus (et molificat) et corpus spiritum indurat”: Aquinas [pseudo], *Aurora consurgens*, 90–1.
 31. See Barry Windeatt’s note in his parallel-text edition: *Troilus and Criseyde: A New Edition of The Book of Troilus* (London and New York: Longman 1984), 269nn400–6. All quotations of Boccaccio are taken from this edition.
 32. Aquinas [pseudo], *Aurora consurgens*, 119n76.
 33. Constantine, *Liber secretorum alchimie*, 99; 264.
 34. Morton W. Bloomfield, “Distance and Predestination in *Troilus and Criseyde*,” *Publications of the Modern Language Association of America* 72 (1957): 19.
 35. John Gower, *Confessio Amantis*, ed. G. C. Macaulay, EETS extra series 81 (Oxford: Clarendon Press, 1899–1902; repr., Oxford: Oxford University Press, 1969), 4.2569–74.
 36. Lee Stavenhagen, ed. and trans., *A Testament of Alchemy: Being the Revelations of Morienus, Ancient Adept and Hermit of Jerusalem to Khalid Ibn Yazid Ibn Mu’Awiyya . . .* (Hanover, NH: Brandeis University Press, 1974), 10–11.

37. Jonathan Hughes, *The Rise of Alchemy in Fourteenth-Century England* (London and New York: Continuum, 2012), 50, paraphrasing Bonus, *Pretiosa*, 153. See also *Theatrum Chemicum*, ed. Lazarus Zetzner, 3rd ed. (Strasbourg: Zetzner, 1659–61) 5:593; 5:614.
38. Calabrese, “Meretricious Mixtures,” 291n22; Conrad of Hirsau, “Dialogus Super Auctores,” in *Accessus ad Auctores, Bernard d’Utrecht, Conrad d’Hirsau*, ed. R. B. C. Huygens (Leiden: Brill, 1970), 114, lines 1335ff.
39. “Cur ovidianis libris Christi tyrunculus docile summittat ingenium, in quibus etsi potest aurum in stercore inveniri, querentem tamen pollut ipse fetor adiacens auro, licet avidum auri”: Calabrese, “Meretricious Mixtures,” 282–3, quoting Conrad, “Dialogus Super Auctores,” 284.
40. Calabrese, “Meretricious Mixtures,” 284.
41. *Ibid.*
42. Although we might consider the appearance of gold as a color in its own right, the medieval association of metallic gold with the color red also appears unambiguously in the *Tale of Sir Thopas*: “His scheld was al of gold so red” (vii.869).
43. See also Aquinas [pseudo], *Aurora consurgens*, 90–1; 91n43.
44. Albertus Magnus, *Libellus*, 46. Other writers consistently use similar variants of this definition. Paul of Tarantino, identified by William R. Newman as the pseudo-Geber who composed the thirteenth-century *Summa perfectionis*, also defines distillation as the elevation of aqueous vapour in a vessel.
45. Hugh W. Salzberg, *From Caveman to Chemist: Circumstances and Achievements* (Washington, DC: American Chemical Society, 1991), 76.
46. R. J. Forbes, *A Short History of the Art of Distillation: From the Beginnings up to the Death of Cellier Blumenthal* (Leiden: Brill, 1970), 60–1.
47. Salzberg, *Caveman to Chemist*, 106.
48. See R. G. W. Anderson, “The Archaeology of Chemistry,” in *Instruments and Experimentation in the History of Chemistry*, ed. Frederic L. Holmes and Trevor H. Leveré (Cambridge, MA: MIT Press, 2000), 5–34.
49. Forbes, *Art of Distillation*, 61.
50. P. G. Maxwell-Stuart, *The Chemical Choir: A History of Alchemy* (New York: Continuum, 2008), 60.
51. Petrus Bonus, *The New Pearl of Great Price*, trans. Arthur Edward Waite (London, 1894; repr., London: Arno Press, 1974), 166.
52. *Ibid.*, 212.
53. Albertus Magnus, *Minerals*, 206.
54. *Ibid.*, 186.
55. William R. Newman, *Promethean Ambitions: Alchemy and the Quest to Perfect Nature* (Chicago: University of Chicago Press, 2004), 64.
56. Hughes, *Rise of Alchemy*, 46; he cites Ashmole MS 1459, fol. 101.
57. Constantine, *Liber secretorum alchimie*, 72.
58. Joseph E. Grennen, “Chaucer’s Characterization of the Canon and His Yeoman,” *Journal of the History of Ideas* 25 (1964): 280.

59. *Ibid.*, 280–1.
60. For my quotations from the Latin text, see Sébastien Moureau, “*Elixir atque fermentum*: New Investigations About the Link between Pseudo-Avicenna’s Alchemical *De anima* and Roger Bacon: Alchemical and Medical Doctrines,” *Traditio* 68 (2013): 289n50. According to William R. Newman, “Pseudo-Avicenna’s *De Anima* is devoted largely to the decomposition of animal, vegetable, and mineral substances by means of fractional distillation”: “Alchemy, Assaying, and Experiment,” in *Instruments and Experimentation in the History of Chemistry*, ed. Frederic L. Holmes and Trevor H. Levere (Cambridge, MA: MIT Press, 2000), 44. For an edition, see Avicenna [pseudo], *De anima*, in *Artis chemicae principes, Avicenna atque Geber* (Basel: Pietro Perna, 1572), 1–147.
61. Moureau, “*Elixir atque fermentum*,” 289.
62. According to pseudo-Arnold, the fractional distillation of blood would first yield a clear liquid, which he identifies as water. A second distillation would then bring about a yellowish distillate, equivalent to elemental air. The third and final extraction distills an oil of red color, which he believes to be elemental fire. This final distillate, placed in a separate receiver, is not only the most pure of these three oils but also is reputed to have medicinal properties. See Erik J. Holmyard, *Alchemy* (Hardmondsworth: Penguin, 1957), 126.
63. Roger Bacon, “Opus minus,” in *Opera quaedam hactenus inedita, 1, Opus tertium, Opus minus, Compendium philosophiae*, ed. J. S. Brewer (London: Longman, 1859), 375; quoted in Moureau, “*Elixir atque fermentum*,” 314.
64. L. DeVun, *Prophecy, Alchemy, and the End of Time: John of Rupescissa in the Late Middle Ages* (New York: Columbia University Press, 2009), 123.
65. Stavenhagen, *Testament of Alchemy*, 16–17. Translation modified.
66. Albertus Magnus, *Minerals*, 232. Interestingly, the *Canon’s Yeoman’s Tale* includes a list of “ful many another thyng / That is unto oure craft apertenynge” (viii.784–5), and in this list the Yeoman mentions “Cley maad with hors or mannes heer” (viii.812, emphasis mine).
67. Albertus Magnus, *Minerals*, 235–6 (translation modified). In the Borgnet edition, 5:4.1.8 (p. 95).
68. *Ibid.*, 234.
69. Mary Carruthers, “On Affliction and Reading, Weeping and Argument: Chaucer’s Lachrymose Troilus in Context,” *Representations* 93 (2006): 9–10.
70. Mann, “Troilus’ swoon,” 327.
71. Carruthers, “On Affliction and Reading,” 7.
72. In the *Knight’s Tale*, for example, Walter Clyde Curry points out how the work of Saturn causes Arcite’s body to accumulate a lethal dose of hot and dry humors in the heart: normally, cold air from the lungs chemically combines (the process known as *mixtio*) with the hot and dry humors of blood from the liver: *Chaucer and the Mediaeval Sciences* (New York: Barnes and Noble, 1926).

73. Will H. L. Ogrinc, "Western Society and Alchemy from 1200 to 1500," *Journal of Medieval History* 6 (1980): 108.
74. See Barbara Obrist's introductory notes to Constantine, *Liber secretorum alchimie*, 3.
75. Albertus Magnus, *Libellus*, 8.
76. See, for example, a discussion of Roger Bacon's writings in William R. Newman, "Medieval Alchemy," in *The Cambridge History of Science, Volume 2: Medieval Science*, ed. David C. Lindberg and Michael H. Shank (Cambridge: Cambridge University Press, 2013), 393.
77. Albertus Magnus, *Minerals*, 178 (my italics).
78. In the *Libellus de alchimia*, Albertus Magnus writes, "When sulphur, black and corrupt, comes into contact with quicksilver, lead is made. Aristotle says of this that lead is leprous gold": *A Source Book in Medieval Science*, ed. Edward Grant (Cambridge, MA: Harvard University Press, 1974), 589. Guillem Sedacer, a fourteenth-century Catalan Carmelite, is also quoted saying that lead was in fact gold suffering from leprosy: Maxwell-Stuart, *Choir*, 60.
79. "uocatur scata +totottin+, id est mala merda corrupti corporis, quia corrupit omnia alia corpora more lepre": Constantine, *Liber secretorum alchimie*, 228; 68.
80. See John Reidy's explanatory notes to the *Riverside* (p. 950); he cites Grennen, "Canon and His Yeoman," 281–2.
81. Albertus Magnus, *Minerals*, 179.
82. Rosemarie P. McGerr, "Meaning and Ending in a 'Paynted Proces': Resistance to Closure in *Troilus and Criseyde*," in *Chaucer's Troilus and Criseyde: "Subgit to alle Poesye," Essays in Criticism*, ed. R. A. Shoaf (Binghamton, NY: Medieval and Renaissance Texts and Studies, 1992), 180 (emphasis mine).
83. Frank Grady, "The Boethian Reader of *Troilus and Criseyde*," *CR* 33 (1999): 243–4. See also Barry Windeatt, *Oxford Guides to Chaucer: Troilus and Criseyde* (Oxford: Oxford University Press, 1992), 301. For a brief critical summary of the ending, see John Conlee, "The Meaning of *Troilus*' Ascension to the Eighth Sphere," *CR* 7 (1972): 27–36.
84. Delany makes use of the theory of alienation as articulated by Bertolt Brecht: "Techniques of Alienation in *Troilus and Criseyde*," in *The Uses of Criticism*, ed. A. P. Foulkes (Bern: Lang, 1976), 77–95. Evans utilizes modern critical concepts developed by Jacques Derrida and formalist Viktor Shklovsky in "'Making Strange': The Narrator (?), the Ending (?), and Chaucer's 'Troilus,'" *Neuphilologische Mitteilungen* 87 (1986): 227.
85. This *contemptus mundi* is particularly harsh in light of "the consummation scenes of Book III which Lewis calls 'some of the greatest erotic poetry of the world.':" Evans, "Making Strange," 218. In my opinion, the palinode seems to disregard the emotional relevance of its readers, not unlike *Criseyde*'s final act of forsaking *Troilus*.
86. See, for example, Peter Dronke, "The Conclusion of *Troilus and Criseyde*," *Medium Aevum* 33 (1964): 47–52; P. M. Kean, "Chaucer's

- Dealings with a Stanza of *Il Filostrato* and the Epilogue of *Troilus and Criseyde*,” *Medium Aevum* 33 (1964): 36–46.
87. Windeatt, *Oxford Guides*, 301. In addition to Windeatt’s critical summary of the ending, see for example Monica E. McAlpine, *The Genre of “Troilus and Criseyde”* (Ithaca, NY: Cornell University Press, 1978), 237n19.
 88. In a similar fashion, the author of the *Libellus de alchimia* reveals the Christian God and the grace of the Holy Spirit as the source of alchemical knowledge: Albertus Magnus, *Libellus*, 1–2.
 89. Muscatine, *French Tradition*, 215.
 90. See Albertus Magnus, *Minerals*, 20.
 91. Moureau, “*Elixir atque fermentum*,” 315.
 92. Constantine, *Liber secretorum alchimie*, 82; 245. Translation slightly modified.
 93. “quia sicut dicitur qualis pater, talis filius, talis et Spiritus Sanctus et hi tres unum sunt [quod philosophus vult esse] corpus spiritus et anima, quia omnis perfectio in numero ternario consistit, hoc est mensura, numero et pondere”: Aquinas [pseudo], *Aurora consurgens*, 278; 82.
 94. Julius Ruska, ed., *Turba Philosophorum: Ein Beitrag zur Geschichte der Alchemie* (Berlin: Springer, 1931), 141. For a translation, see A. E. Waite, trans., *The Turba Philosophorum* (York Beach, ME: Samuel Weiser, 1970), 109–10 (emphasis mine). Translation slightly modified.
 95. Lynn Thorndike, *History of Magic and Experimental Science* (New York: Columbia University Press, 1923), 3:76. See also Lawrence M. Principe, *Secrets of Alchemy* (Chicago: University of Chicago Press, 2012), 68.
 96. Bonus, *New Pearl*, 262.
 97. Constantine, *Liber secretorum alchimie*, 81–2; 245.
 98. Albertus Magnus, *Minerals*, 157.
 99. Boccaccio’s *Teseida* reads “cielo ottava,” as influenced by the numbering of planets in Cicero’s *Somnium scipionis*, which suggests to many scholars that the stated seventh sphere in many *Troilus* manuscripts in fact originates from a scribal misreading of Roman numerals. Two other possible spheres arise from counting outward from Earth, which brings the spheres of Saturn and the fixed stars to the table. For a discussion of a possible scribal error in the manuscript tradition, see Robert Kilburn Root, *The Book of Troilus and Criseyde*, ed. Robert Kilburn Root (Princeton, NJ: Princeton University Press, 1926), 559–62; Windeatt, *Oxford Guides*, 209.
 100. Dorothy Wyckoff notes that the *Tabula smaragdina* is probably of Greek origin, dating before the Islamic invasion of Egypt (though transmitted into Latin from Arabic) and “is perhaps the oldest, certainly the most famous and the most obscure of the Hermetic writings on alchemy”: see her notes in *Minerals*, 282. For Hermes’s reputation during the Middle Ages, see Thorndike, *History*, 2:214–20 and the *Riverside*, 951.
 101. For a standard, twelfth-century Latin translation of the *Emerald Tablet* of Hermes, see Robert Steele and Dorothea Waley Singer, “The

- Emerald Table,” *Proceedings of the Royal Society of Medicine* 21 (1928): 485–501. Interestingly, Isaac Newton also wrote a lengthy analysis of the *Tabula*.
102. See John Read, *Through Alchemy to Chemistry* (New York: Harper & Row, 1963), 22.
 103. Quotation from Newman, “Medieval Alchemy,” 389.
 104. Epseth Whitney, “What’s Wrong with the Pardoner?: Complexion Theory, the Phlegmatic Man, and Effeminacy,” *CR* 45 (2011): 363.
 105. Albertus Magnus, *Minerals*, 17.
 106. Carruthers, “On Affliction and Reading,” 1.
 107. “Grandis quidem ilia una, sed non insolubilis quaestio, si perpetua et studiosa sit requisitio, se in Deum et Deum in se quaerere; praecedit quidem alia quaestio se in se quaerere”: *Ibid.*, 3. Carruthers quotes from Jean Leclercq, *La spiritualité de Pierre de Celle* (Paris: Vrin, 1946), 231–9. For the English translation, see Hugh Feiss, *The Selected Works of Peter of Celle* (Kalamazoo, MI: Cistercian, 1987), 131–41.
 108. Jessica Rosenfeld, *Ethics and Enjoyment in Late Medieval Poetry* (Cambridge: Cambridge University Press, 2011), 61–2.
 109. *Ibid.*, 27.
 110. Stavenhagen, *Testament of Alchemy*, 28–9.
 111. DeVun, *Prophecy*, 85.
 112. Carruthers, “On Affliction and Reading,” 13–14.
 113. For the *Rose*, see Rosenfeld, *Ethics and Enjoyment*, 62–3.
 114. Albertus Magnus, *Minerals*, 234–5.
 115. A. C. Spearing, *Chaucer: “Troilus and Criseyde”* (London: Edward Arnold, 1976), 63.
 116. Taylor, “The Alchemy of Spring in Chaucer’s *General Prologue*,” *CR* 17 (1982): 2–3.
 117. “aurora dicitur finis noctis et principium diei vel mater solis, sic nostra aurora in rubedine summa est finis totius tenebrositatis et fugatio noctis, longiturnitatis hiemalis illius”: Aquinas [pseudo], *Aurora consurgens*, 50–1.
 118. The narrator of *Troilus* describes another possible episode of alchemical spring in Book 5: “The gold-tressed Phebus heighe on-lofte / Thries hadde alle with his bemes cleene / The snowes molte, and Zepherus as ofte / Ibrought ayeyn the tendre leves grene” (v.8–11, emphasis mine).
 119. For the identification and relationship of these two readings, I am indebted to Nicolette Zeeman.
 120. Newman, *Medieval Crossover: Reading the Secular against the Sacred* (Notre Dame, IN: University of Notre Dame Press, 2013), 8.
 121. Muscatine, *French Tradition*, 165.
 122. Robert R. Edwards, “Pandarus’s ‘Unthrif’ and the Problem of Desire in *Troilus and Criseyde*,” *Chaucer’s Troilus and Criseyde: “Subgit to alle Poesye,” Essays in Criticism*, ed. R. A. Shoaf (Binghamton, NY: Medieval and Renaissance Texts and Studies, 1992), 85. Edwards is quoting Singleton’s edition of *Purgatorio* 2.2.392.

5 Counterfactual Conditionals in the Avian Debate: *Ars Obligatoria* and Possible Worlds Semantics in the *Parliament of Fowls*

1. In the *Boece*, the example of conditional necessity is: “yif thou wost that a man walketh, it byhoveith by necessite that he walke” (v.6.178–83). See Susan H. Cavanaugh’s note on p. 939 of the *Riverside*. Also relevant to this discussion is Anne Payne’s article on foreknowledge and free will in the *Nun’s Priest’s Tale*: “the linguistic formulation of conditional necessity, it will doubtless have been observed, has a certain tautological air about it”: “Foreknowledge and Free Will: Three Theories in the *Nun’s Priest’s Tale*,” *CR* 10 (1976): 212.
2. J. A. W. Bennett, *The Parlement of Foules: An Interpretation*, 2nd ed. (Oxford: Oxford University Press, 1965).
3. A. J. Minnis, “The Parliament of Fowls,” in *Oxford Guides to Chaucer: The Shorter Poems*, ed. A. J. Minnis, V. J. Scattergood, and J. J. Smith (Oxford: Oxford University Press, 1995), 252–322. See also Thomas L. Reed, *Middle English Debate Poetry and the Aesthetics of Irresolution* (Columbia: University of Missouri Press, 1990), 355.
4. Minnis, “Parliament,” 315. For the poem’s associations with the conventional *demande*, see Derek S. Brewer, “The Genre of the Parlement of Foules,” *Modern Language Review* 53 (1958): 321–6.
5. Zeeman, “Philosophy in Parts: Jean de Meun, Chaucer, and Lydgate,” in *Uncertain Knowledge: Scepticism, Relativism, and Doubt in the Middle Ages*, ed. Dallas G. Denery II, Kantik Ghosh, and Nicolette Zeeman (Turnhout: Brepols, 2014), 234.
6. I am much indebted to Hester Gelber for my discussion with her about Duns Scotus. See Hester Goodenough Gelber’s 2004 book entitled *It Could Have Been Otherwise: Contingency and Necessity in Dominican Theology at Oxford, 1300–1350* (Leiden: E.J. Brill, 2004).
7. For an introductory discussion on the *obligationes*, see, for example, Catarina Dutilh Novaes, “Logic in the 14th Century after Ockham,” in *Handbook of the History of Logic*, vol. 2: *Medieval and Renaissance Logic*, ed. Dov M. Gabbay and John Woods (Amsterdam: Elsevier, 2008), 433–504; see also John Marenbon, *Medieval Philosophy: An Historical and Philosophical Introduction* (Oxon: Routledge, 2007), 321–2.
8. Jennifer E. Ashworth, “Logic,” in *The Cambridge History of Science, Volume 2: Medieval Science*, ed. David C. Lindberg and Michael Shank (Cambridge: Cambridge University Press, 2013), 541.
9. Ralph Strode, who was possibly an occasional *nobilis poeta* as well, wrote a *Logica* while a fellow at Merton College. This logic treatise was a set text at Oxford and at Padua, and historians are inclined to think it represents the main interests of fourteenth-century logicians (it includes sections on introductory logic, consequence, supposition, *obligationes*, and *insolubilia*). He was Chaucer’s close neighbor in London, living over Aldersgate, and there is evidence in Cambridge University MS Dd.3.53 that Strode was

- the tutor for Chaucer's son Lewis at Oxford. Strode, however, was perhaps infamous among Oxford dons for writing a now lost dream vision entitled *Phantasma Radulphi*. See also Rodney Delasanta, "Chaucer and Strode," *CR* 26 (1991): 205–18.
10. Howard H. Schless, *Chaucer and Dante: A Reevaluation* (Norman, OK: Pilgrim, 1984), 94.
 11. Kathryn L. Lynch, *Chaucer's Philosophical Visions*, *Chaucer Studies* 27 (Cambridge: D.S. Brewer, 2000), 99.
 12. Simo Knuuttila, "Modal Logic," in *The Cambridge History of Later Medieval Philosophy*, ed. Norman Kretzmann, Anthony Kenny, and Jan Pinborg (Cambridge: Cambridge University Press, 1982), 354.
 13. Larry M. Sklute concludes, "inconclusion has been useful to this form whose interest has been to articulate the possibility of a valid pluralism": "The Inconclusive Form of the *Parliament of Fowls*," *CR* 16 (1981): 123.
 14. See lines 172–5 and 206, and Aristotle's *Physics* 3.4.203b25–30.
 15. In Derek Brewer's introduction to his edition of *The Parlement of Foulys*, he points out that the question of the *demande d'amour* now becomes "What is to happen to those [suitors] who are unsuccessful?": *The Parlement of Foulys* (London: Thomas Nelson, 1960), 12.
 16. For a discussion on modality as alternativeness, see Simo Knuuttila, "Medieval Modal Theories and Modal Logic," in *Handbook of the History of Logic*, vol. 2: *Medieval and Renaissance Logic*, ed. Dov M. Gabbay and John Woods (Amsterdam: Elsevier, 2008), 505–78.
 17. *Ibid.*, 550.
 18. Bennett, *Parlement*, 15.
 19. Knuuttila, "Medieval Modal Theories," 518; 521.
 20. *Ibid.*, 523.
 21. Calvin Normore, "Divine Omniscience, Omnipotence and Future Contingents: An Overview," in *Divine Omniscience and Omnipotence in Medieval Philosophy*, ed. Tamar Rudavsky (Dordrecht: D. Reidel, 1985), 3–22. Scotus developed a modal theory that is widely recognized as a profound deviation from the "statistical model" of modality that was derived from Aristotle and subsequently developed through Boethius and Thomas Aquinas; See also Oscar Becker, *Untersuchungen über den Modalkalkül* (Meisenheim am Glan: Anton Hain, 1952).
 22. Knuuttila, "Modal Logic," 342–58; 355. It is important to note, however, that "Scotus never uses the phrase 'possible world,' but the term was coined by Scotists in the early modern period and then taken up by Leibniz, from whom the modern logicians adopted it": Marenbon, *Medieval Philosophy*, 292.
 23. Kathleen Hewitt, "'Ther It Was First': Dream Poetics in the Parliament of Fowls," *CR* 24 (1989): 21.
 24. Bennett, *Parlement*, 63; Derek S. Brewer, "The Parliament of Fowls: Community and Conflict," in *A New Introduction to Chaucer* (London: Longman, 1998), 137.

25. Piero Boitani, "Old Books Brought to Life in Dreams," in *The Cambridge Companion to Chaucer*, ed. Piero Boitani and Jill Mann (Cambridge: Cambridge University Press, 2003), 69.
26. Robert R. Edwards, *The Dream of Chaucer: Representation and Reflection in the Early Narratives* (Durham, NC: Duke University Press, 1989), 140.
27. Wolfgang Clemen, *Chaucer's Early Poetry*, trans. C. A. M. Sym (London: Shenval Press, 1963), 139.
28. Quotation from Gelber, *Contingency and Necessity*, 131.
29. *Ibid.*, 348.
30. Ashworth, "Logic," 543.
31. Knuuttila, "Modal Logic," 348.
32. *Summa logicae*, 2.10, cited in Alexander Broadie, *Introduction to Medieval Logic*, 2nd ed. (Oxford: Oxford University Press, 1993), 61. Similarly, logicians such as John Buridan reasoned that any proposition is true to the extent that individual things are each signified in the proposition, regardless of the way the proposition itself as whole is signified (*Ibid.*, 58); Paul Vincent Spade also cites Albert of Saxony and Walter Burley: "Insolubilia," in *The Cambridge History of Later Medieval Philosophy*, ed. Norman Kretzmann, Anthony Kenny, and Jan Pinborg (Cambridge: Cambridge University Press, 1982), 249n31.
33. Ashworth, "Logic," 544.
34. Similarly, Boethius's discussion of the fallacy *secundum diversum tempus* articulates the varying truth-conditions from each temporal distinction of each predicate: see Knuuttila, "Modal Logic," 347.
35. Bennett, *Parlement*, 79–80.
36. Catarina Dutilh Novaes, "Medieval *Obligaciones* as Logical Games of Consistency Maintenance," *Synthese* 145 (2005): 371. This article on medieval *obligaciones* as logical games of consistency maintenance also provides a very useful introduction to a critical history of *obligaciones*.
37. Sara Uckelman, "Interactive Logic in the Middle Ages," *Logic and Logical Philosophy* 21 (2012): 444.
38. Novaes, "Medieval *Obligaciones*," 373.
39. Paul Vincent Spade, "Three Theories of *Obligaciones*: Burley, Kilvington and Swyneshed on Counterfactual Reasoning," *History and Philosophy of Logic* 3 (1982): 1–32. He later qualifies his argument in his 1992 article, "If *Obligaciones* Were Counterfactuals," *Philosophical Topics* 20 (1992): 171–88. As will be discussed in greater detail, counterfactual conditionals are essentially "if... then..." statements where the consequent should be true if the antecedent were true.
40. Catarina Novaes, "Roger Swyneshed's *Obligaciones*: A Logical Game of Inference Recognition?" *Synthese* 151 (2006): 125–53.
41. Henrik Lagerlund and Erik Olsson, "Disputation and Change of Belief: Burley's Theory of *obligaciones* as a Theory of Belief Revision," in *Medieval Formal Logic: Obligations, Insolubles, and Consequences*, ed. M. Yrjönsuuri (Dordrecht: Kluwer, 2001), 35–62.

42. Christopher J. Martin, "Obligations and Liars," in *Sophisms in Medieval Logic and Grammar: Acts of the Ninth European Symposium for Medieval Logic and Semantics, held at St Andrews, June 1990*, ed. Stephen Read (Dordrecht: Kluwer, 2001), 357–81. Martin is paraphrased by Novaes, "Medieval *Obligations*," 374. Martin's idea supports Novaes's notion of consistency maintenance.
43. Mikko Yrjönsuuri, "Obligations as Thought Experiments," in *Studies on the History of Logic*, ed. I. Angelelli and M. Cerezo (Berlin: Walter de Gruyter, 1996), 79–96.
44. The notion of *positio impossibilis* is drawn from Knuuttila, "Medieval Modal Theories," 530.
45. Knuuttila, "Medieval Modal Theories," 530n83.
46. Uckelman ("Interactive Logic," 441–5) provides a longer and more comprehensive list of well-known medieval authors writing about the *obligationes*.
47. Bennett, *Parlement*, 109.
48. See Eleonore Stump, "Obligations: From the Beginning to the Early Fourteenth Century," in *The Cambridge History of Later Medieval Philosophy*, ed. Norman Kretzmann, Anthony Kenny, and Jan Pinborg (Cambridge: Cambridge University Press, 1982), 318. However, Novaes ("Medieval *Obligations*," 393n4) clarifies, "it seems that the *antiqua responsio* remained dominant."
49. Uckelman, "Interactive Logic," 449.
50. Stump, "Obligations," 315.
51. For the idea that the obligations represent the construction of a possible world, see Martin, "Obligations and Liars," 357–81; see also Novaes, "Medieval *Obligations*," 374.
52. Bennett, *Parlement*, 169.
53. Minnis, "Parliament," 312.
54. Reed, *Aesthetics of Irresolution*, 358–60.
55. In particular, Kilvington's new rule later in the fourteenth century, which dealt with the difficulties of irrelevant propositions, "shifts the emphasis of obligations away from a consideration of scattered paradoxes arising from difficulties in evaluating certain inferences in disputational contexts and towards a logic of counterfactuals": Stump, "Obligations," 332.
56. Bennett, *Parlement*, 169. Similarly, Clemen believes "it would be a mistake to take this classification of the birds as being a faithful picture of the parliaments and 'estates' of those days" (*Early Poetry*, 156).
57. As Broadie notes, "Thus the dictum of 'A man is an animal' is 'that a man is an animal'" (*Introduction to Medieval Logic*, 58).
58. Examples from Stump, "Obligations," 334.
59. *Ibid.*, 333.
60. Gelber, *Contingency and Necessity*, 188.
61. *Ibid.*, 187.
62. *Ibid.*, 189. For Knuuttila's stance, see "Trinitarian Sophisms in Robert Holkot's Theology," in *Sophisms in Medieval Logic and Grammar*, ed. Stephen Read (Dordrecht, 1993), 348–56.

63. David Lawton, *Chaucer's Narrators* (Cambridge: Cambridge University Press, 1985), 42.
64. Deanne Williams, "The Dream Visions," in *The Yale Companion to Chaucer*, ed. Seith Lerer (New Haven, CT: Yale University Press, 2006), 172.
65. Bennett, *Parlement*, 175.
66. Zeeman, "Philosophy in Parts," 227.
67. Quotation from Uckelman, "Interactive Logic," 452. See also Paul Vincent Spade, "The Logic of Disputation in Walter Burley's Treatise on Obligations," *Synthese* 63 (1985): 355–74.
68. Quotation from Boitani, "Old Books," 71.
69. Stump translates an example of this kind of *positum* from Burley's treatise *de obligationibus*: "If you respond affirmatively to the first *propositum*, let the *positum* be 'You run, and otherwise not' (dependent *positio*)" (Stump, "Obligations," 321).
70. *Ibid.*, 322. For William Heytesbury and Thomas Bradwardine, a *casus* is false or paradoxical only in the context of certain assumed stipulations, which are not relevant to the *obligationes*.
71. Paul Vincent Spade and Stephen Read, "Insolubles," *SEP (Winter 2009 Edition)*, ed. Edward N. Zalta, <http://plato.stanford.edu/archives/win2009/entries/insolubles/>.
72. This discussion is drawn from an example cited in Gelber, *Contingency and Necessity*, 196–7.
73. *Ibid.*, 197.
74. *Ibid.*, 183.
75. *Ibid.*, 190.
76. This focus so far has been the *positio* mode of *obligatio* of the more dominant *antiqua responsio* from Walter Burley's theory. These three responses (accept, deny, and doubt) are the most common. Other kinds of *obligationes* mentioned in Burley's treatise include: positing (*positio*), counterpositing (*depositio*), "let it be doubted" (*dubitetur*), institution (*institutio*), the truth of the matter (*rei veritas*), and petition (*petitio*). Uckelman concludes, "Every author had their own idiosyncrasies with respect to the specific rules and constraints on the disputations": "Interactive Logic," 442.
77. Ian Robinson, *Chaucer and the English Tradition* (Cambridge: Cambridge University Press, 1972), 61.
78. Paul Vincent Spade and Mikko Yrjönsuuri, "Medieval Theories of *Obligations*," *SEP (Winter 2014 Edition)*, ed. Edward N. Zalta, <http://plato.stanford.edu/archives/win2009/entries/obligationes/>.
79. Boitani, "Old Books," 70.
80. Novaes, "Logic," 372.
81. Knuuttila, "Medieval Modal Theories," 549.
82. Gelber, *Contingency and Necessity*, 143.
83. Knuuttila, "Medieval Modal Theories," 550.
84. Russell A. Peck, "Chaucer and the Nominalist Questions," *Speculum* 53 (1978): 758.

6 Conclusion: Chaucer and the Reality of Change

1. Vincent Foster Hopper defines arithmology as “the kindred science . . . as the philosophy of the powers and virtues of particular integers.” First, arithmology in the Middle Ages develops from the *Theologoumena arithmeticae*, attributed to Nicomachus or Iamblichus, and its influence is noticeable in Isidore of Seville’s *Liber numerorum* and Martianus Capella’s *De nuptiis philologiae et mercurii*. In short, “no branch of medieval thought appears entirely to have escaped the influence of number symbolism”: *Medieval Number Symbolism, Its Sources, Meaning, and Influence on Thought and Expression* (1932; repr., New York: Dover, 2000), 104–5.
2. Macrobius, *Commentary on the Dream of Scipio*, trans. William Harris Stahl (New York: Columbia University Press, 1952), 190.
3. *Ibid.*, 190.
4. Martianus Capella, *The Marriage of Philology and Mercury*, ed. William Harris Stahl, Richard Johnson, and E. L. Burge (New York: Columbia University Press, 1977), 278.
5. Macrobius, *Commentary*, 103 (emphasis mine).
6. *Ibid.*, 191 (emphasis mine).
7. Capella, *De nuptiis philologiae et mercurii*, 277–8.
8. *Ibid.*, 277.
9. Lotario dei Segni (Pope Innocent III), *De miseria condicionis humane*, ed. and trans. Robert Lewis (Athens: University of Georgia Press, 1978), 136–7.
10. “Scriptum est enim: ‘Terra es, et in terram ibis.’ Naturale siquidem est ut materiatum in materiam resolvatur.” *Ibid.*, 204–5.
11. “Sane formatus est homo de terra . . . fit cibus ignis, esca vermis, massa putredinis . . . formatus est homo de pulvere, de luto, de cinere.” *Ibid.*, 94–5.
12. Lee Stavenhagen, ed. and trans., *Testament of Alchemy: Being the Revelations of Morienus, Ancient Adept and Hermit of Jerusalem to Khalid Ibn Yazid Ibn Mu’awiyya, King of the Arabs of The Divine Secrets of the Magisterium and Accomplishment of the Alchemical Art* (Hanover, NH: Brandeis University Press, 1974), 14–15.
13. Lotario dei Segni [Pope Innocent III], *De miseria condicionis humane*, ed. and trans. Robert Lewis (Athens: University of Georgia Press, 1978), 131–3.

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