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# The St. John's Review

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The Secret Art of Isaac  
 Newton's *Philosophiae  
 Naturalis Principia Mathematica*  
 Part Two  
 Judith Seeger

#### 4. The Second Hidden Text: The Great Work of Nature

Tis true without lying, certain & most true.  
 That w<sup>ch</sup> is below is like that w<sup>ch</sup> is above & that  
 w<sup>ch</sup> is above is like y<sup>t</sup> w<sup>ch</sup> is below to do y<sup>e</sup> miracles  
 of one only thing

And as all things have been & arose from one by  
 y<sup>e</sup> mediation of one: so all things have their birth  
 from this one thing by adaptation.

The Sun is its father, the moon its mother, the  
 wind hath carried it in its belly, the earth is its  
 nurse. The father of all perfection in ye whole  
 world is here. Its force or power is entire if it be  
 converted into earth.

Separate thou y<sup>e</sup> earth from y<sup>e</sup> fire, y<sup>e</sup> subtile from  
 the gross sweetly w<sup>th</sup> great indoustry. It ascends  
 from y<sup>e</sup> earth to y<sup>e</sup> heaven & again it descends to  
 ye earth & receives ye force of things superior &  
 inferior.

By this means you shall have y<sup>e</sup> glory of y<sup>e</sup> whole  
 world & thereby all obscurity shall fly from you.

Its force is above all force. For it vanquishes every subtile thing & penetrates every solid thing. So was y<sup>e</sup> world created . . . (“Tabula Smaragdina,” translated by Isaac Newton)<sup>37</sup>

The General Scholium with which the second and third editions of the *Principia* end is so powerful that it may obscure the discussion of comets that precedes it. That discussion, however, is of crucial importance. The main text of all three editions of the *Principia* culminates with Newton’s demonstration that the formerly fear-inspiring comets, rather than being supernatural signs of God’s wrath, are natural bodies that obey the same laws as the planets. This accomplishment is one of the triumphs of the book. But Newton did not stop there. The wide-ranging disquisition on comets at the end of Book 3—consisting primarily of celestial observations, mathematical calculations, and inferences drawn from Newton’s optical studies—includes, as well, assertions about the active role comets play in the universe, in passages that stand out in the context of mathematical calculations and demonstrations.

Consider, for example, the remarks that follow Proposition 41 of Book 3 in all three editions. At this point, Newton has already established that the bodies of comets are “solid, compact, fixed, and durable, like the bodies of planets” (918), and that their tails are composed of extremely thin vapor which the head or nucleus of the comet emits under the influence of the fierce heat of the sun. Then, surprisingly (for what does this have to do with the mathematical determination of celestial motion ruled by universal gravitation?), he states that this extremely thin vapor is essential to the replenishment both of water on earth and of a more subtle spirit required for life. The passage continues:

For vapor in those very free spaces becomes continually rarefied and dilated. For this reason it happens that every tail at its upper extremity is

broader than near the head of the comet. Moreover, it seems reasonable that by this rarefaction the vapor—continually dilated—is finally diffused and scattered throughout the whole heavens, and then is by degrees attracted toward the planets by its gravity and mixed with their atmospheres. For just as the seas are absolutely necessary for the constitution of this earth, so that vapors may be abundantly enough aroused from them by the heat of the sun, which vapors either—being gathered into clouds—fall in rains and irrigate and nourish the whole earth for the propagation of vegetables, or—being condensed in the cold peaks of mountains (as some philosophize with good reason)—run down into springs and rivers; so for the conservation of the seas and fluids on the planets, comets seem to be required, so that from the condensation of their exhalations and vapors, there can be a continual supply and renewal of whatever liquid is consumed by vegetation and putrefaction and converted into dry earth. For all vegetables grow entirely from fluids and afterward, in great part, change into dry earth by putrefaction, and slime is continually deposited from putrefied liquids. Hence the bulk of dry earth is increased from day to day, and fluids—if they did not have an outside source of increase—would have to decrease continually and finally to fail. Further, I suspect that that spirit which is the smallest but most subtle and most excellent part of our air, and which is required for the life of all things, comes chiefly from comets. (926)

This is an allegory of circulation as the alchemists understood it, in which the spirit provided by the tails of comets is analogous to the philosophers’ mercury—whose many names included dew of heaven, oriental water, celestial water, our

balm, our honey, May dew, silver rain—the spiritual agent, whose properties were activated, according to Basil Valentine, by expulsion from its habitat in the form of airy vapors, and whose descent was perceived as heavenly condensation falling to nourish the earth, which would perish without it (Nicholl, 92-3).<sup>38</sup> Newton is not here speaking of circulatory motion within a single immovable plane, which he has shown in Proposition 1 of Book 1 to be the motion of bodies driven in orbits under the influence of centripetal force. He is describing, rather, a continual churning within the universe, the manifestation of nature as a circulatory worker, to borrow his characterization of it in 1675.<sup>39</sup> This is an image of earth as retort, inasmuch as comets supply both the fluids and the subtle spirit required for the development of life itself.

The final book of the first edition of the *Principia* ends abruptly with Proposition 42. But the second edition continues. In addition to incorporating more observations and calculations of the paths of comets, Newton in the 1713 edition extends the image of renewal nourished by comets to the fixed stars themselves, writing, “So also fixed stars, which are exhausted bit by bit in the exhalation of light and vapors, can be renewed by comets falling into them and then, kindled by their new nourishment, can be taken for new stars. Of this sort are those fixed stars that appear all of a sudden, and that at first shine with maximum brilliance and subsequently disappear little by little” (937). This phenomenon, he comments, had been noted by such reliable observers as Cornelius Gemma, Tycho Brahe, and Kepler’s pupils.

In his last recorded conversation with John Conduitt, Newton, at the age of 83, expanded upon the circulatory image implicit in this understanding of those celestial events; for, as the preceding citations from the *Principia* show, he regarded the appearance of what we call supernovae as evidence that the universe itself undergoes vast cycles of destruction and regeneration. Conduitt wrote of this conversation that:

it was his conjecture (he would affirm nothing) that there was a <sort of> revolution in the heavenly bodies that the vapours & light ~~gathered~~ <emitted> by the sun <which had their sediment as water & other matter had> gathered themselves by degrees into a body <& attracted more matter from the planets> & at last made a secondary planet (viz. one of those that go round another planet) & then by gathering <to them> & attracting more matter became a primary planet, & then by increasing still became a comet w<sup>ch</sup> after certain revolutions & by coming nearer & nearer the sun, had all its volatile parts condensed & became a matter fit to recruit <& replenish> the sun (w<sup>ch</sup> must waste by the constant heat & light it emitted), as a fagot ~~put into~~ <would> this fire if put into it (wee were sitting by ~~the~~ <a wood> fire) & and that that would probably be the effect of the comet in 1680 sooner or later . . . (Iliffe, 1: 165).

Newton added that when this collision occurred, after perhaps five or six more revolutions, it would “so much increase the heat of the sun that <this earth would be burnt &> no animals in this earth could live” (Iliffe, 1: 165). Indeed, he seemed to Conduitt “to be very clearly of opinion” that such a collision, and subsequent “repeopling” by the Creator had happened at least once already, observing, first, “that the inhabitants of this earth were of a short date,” partly because “all arts as letters long ships printing – needle &c were discovered within the memory of History, w<sup>ch</sup> could not have happened if the world had been eternal,” and, further, that as far as the earth itself was concerned, “there were visible marks of men [Westfall (1984: 862) has “ruin” here; the word must be difficult to make out.] upon it wh<sup>ch</sup> could not be effected by a flood only” (Iliffe, 1: 166). Such collisions were, Newton speculated, the cause of the suddenly

brilliant stars he had noted in the *Principia*—but without mentioning there, as he did in his conversation with Conduitt, that he took those stars to be “suns enlightning other planets as our sun does ours” (Iliffe, 1: 165). When Conduitt asked him “why he would not own as freely what he thought of the sun as well as what he thought of the fixed stars—he said that concerned us more, & laughing added he had said enough for people to know his meaning” (Iliffe, 1: 166).<sup>40</sup>

Newton could laugh, even in the face of past and future death and devastation, for he trusted that a benevolent and all-powerful God—both perfect mechanic and perfect alchemist—determines everything that happens in the universe, including the generation and apocalyptic destruction of all living things (as, of course, Newton had also read in the Bible, though he seems not to have mentioned that particular bit of testimony in the conversation Conduitt recorded). The second text concealed in the *Principia*, by giving us an alchemical account of the generation of life, expresses Newton’s confidence in God as perfect master of the Great Work. This text is fully contained in the following sentence, added to the second edition of the *Principia*, in a translation based on that of Cohen and Whitman (938), but retaining the ampersands of the Latin text. The issue is not the use of the ampersand itself, which appears stranger here in English than it does in the *Principia*, as it is used throughout that work. What is striking is that both a comma and an ampersand separate every term from the one that follows it. This is not Newton’s common practice when listing members of a series:

And the vapors that arise from the sun & the fixed stars & the tails of comets can fall by their gravity into the atmospheres of the planets & there be condensed & converted into water & humid spirits, & then—by a slow heat—be transformed gradually into salts, & sulphurs, & tinctures, &

slime, & mud, & clay, & sand, & stones, & corals, & other earthy substances.

In the second edition this sentence is followed by two more sentences. In the third edition those two sentences have been omitted, so that the sentence cited above is the last one in the body of the work immediately preceding the General Scholium.

By the time he wrote these words, Newton had abandoned his attempts to achieve experimental evidence for the existence of the forces he had sought through his alchemical work, but his references to comets show that he had not abandoned his faith in the truth behind that quest, for the language and imagery of this sentence come from mystical alchemy. The sentence can be read as an allegory of the three fundamental processes by which, according to the alchemists, nature perfects her work: sublimation (the vapors arise from the sun, the fixed stars, and the tails of comets); distillation (by gravity they are condensed and turned into water and humid spirits); and concoction (they change form under the application of a slow heat). This process as a whole Newton knew as vegetation, which in one of his earliest texts on this subject (called “Of Nature’s obvious laws & processes in vegetation,” written between 1670 and 1675) he explicitly distinguished from what he called the “gross mechanically transposition of parts” (3r). In the 1670s Newton had no inkling either of universal gravitation—writing, for example, that clouds could rise high enough to “loos their gravity” (5r)—or of a possible connection between comets and life on earth. Although he writes in the manuscript that, “this Earth resembles a great animall or rather inanimate vegetable, draws in aethereall breath for its dayly refreshment & vitall ferment & transpires again with gross exhalations” (3v), he does not claim to know the renewable source of the ethereal breath. After writing the *Principia*, however, he was able, in allegorical language, if not in the language of experimental science or mathematics, to complete the system of life-giving

circulation.<sup>41</sup> The products of vegetation, listed in order as rising from the depths of the planet toward its surface in the presence of the fertilizing philosophical mercury falling from the heavens are emphasized in the Latin text by the repetition of the ampersand. The first three—fundamental salts, oleaginous and fiery sulphurs, and transforming tinctures—are alchemical ingredients of increasing power, associated with spirit and necessary for the origin and development of life. The next four describe the evolution of matter under the gradual drying effect of slow heating: slime (the residue of putrefaction), mire, clay, and sand. With the eighth member of the series, stones (a category that includes precious stones), we begin to see the organization associated with the mineral kingdom, considered a union of spirit and matter. The ninth member of the series is coral, which also appears in the generative series in “Of Nature’s obvious laws.” Unmodified this would be red coral, a precious natural analogue (according, for example, to Michael Maier, nine of whose works were part of Newton’s library) of the crimson philosophers’ stone (169). With coral we pass from the mineral to the vegetable kingdom, for coral was thought in Newton’s day to be a marine plant, which grew under water and hardened to stone when brought into the air. The last member of the sequence—seventh in the group comprising the evolution of matter, third in the group comprising the evolution of life in terms of the three “kingdoms,” and tenth in the entire process comprising the gradual union of spirit and matter—brings us to the animal kingdom, telling us that “all terrestrial substances,” a category that includes our own bodies, have come into being through the natural transmutation of celestial vapors by gravity and the planet’s slow heat. Newton begins this sentence speaking generically about planets. He ends it speaking specifically about that which “concerns us more”: our earth and ourselves.

The final sentence of the body of the *Principia*, then, reaches back to the very beginnings of Newton’s concern with cosmology. He has returned at the end to the old

questions on a new level of understanding made possible by his discoveries in the *Principia*, though not yet sufficiently developed to be expressed openly in the mathematical language of experimental philosophy. In the second and, even more pointedly, in the third edition of the *Principia* (both prepared with more leisure than the first edition), it seems, Newton wanted to end his book with a powerful vision encompassing all of nature; a vision which, like that of the veiled text at the beginning of Book 1, would be at once as clear as crystal to those who knew how to read it and as clear as mud to those who did not. The dissertation on comets is the last dual teaching. Through careful observations and sophisticated mathematical calculations Newton has transformed our understanding of the nature of comets and the laws behind their motion. But he has also composed hauntingly beautiful images of generation in our universe and on our earth, for in the final allegory comets link the earth and everything in it to the heavens. Newton chose not to express this grand life-giving circulation openly in the *Principia*. But he did include it. The processes revealed in these allegories declare the Great Work of nature under the guidance of God. In this vision perpetual circulation leads to life itself, and universal gravitation is its motor.

##### 5. “The fountain I draw it from”

Nature may truly be described as being *one*, true, simple, and perfect in her own essence, and as being animated by an invisible spirit. If therefore you would know her, you, too, should be true, single-hearted, patient, constant, pious, forbearing and, in short, a new and regenerate man. (*The Sophic Hydrolith*)<sup>42</sup>

I am not so bold as to assert that I have interpreted the concealed texts correctly in every detail and I certainly do not claim that I have discussed every appearance of symbolism in the book. Nevertheless, I hope I have shown that a coherent

vision may be seen by reading the beginning of Book 1 of the *Principia* in terms of numerological, esoteric geometrical, theological, and alchemical symbolism, and by reading the end of Book 3 in terms of alchemical allegory. I am not arguing that the *Principia* properly understood is a sort of *Paradise Regained* couched in mathematical metaphors, and I have not forgotten for a moment that I am dealing with the foundational text of modern terrestrial and celestial mechanics; that what I have been calling the exoteric text has existed ostensibly on its own for over 300 years; and that the esoteric texts, in the absence of the exoteric text, would be no more than mystical fancies, and perhaps not particularly interesting ones at that. Nevertheless, it would be a mistake to dismiss or avoid the esoteric texts, because they open the way to a new and richer level of understanding of the work as a whole, as well as of its author.

In fact, the existence of concealed texts in the *Principia* is a solution, rather than a problem. Newtonian scholarship has been a prolonged and uneasy exercise in rethinking his work. Isaac Newton devoted the passion of his soul and the activity of his intellect to discovering the intelligibility and the unity of the world in all its manifestations. Yet even before we knew of his vast manuscript collection of theological and alchemical writings, whose subjects and style are so very different from those usually attributed to the author of the *Principia*, Newton was considered a complex and contradictory character. Now, the impacts of successive revelations—among them the ardency of his alchemical pursuits, the intensity of his theological studies, and his conviction that much of his work was restoring ancient learning—seem to some to have shattered the possibility of ever seeing him as a single, cohesive individual.

The *Principia* has been the crux of the problem. Mathematicians and physicists have, quite reasonably, focused on its mathematical and physical aspects. Meanwhile, Newton's biographers and the students of his theological and alchemical pursuits have, for the most part, surrendered the

*Principia* to those capable of following its formidable mathematics. I hope that, by looking closely at the *Principia* in a way that (to my knowledge) has not been attempted before, I have demonstrated that the mathematical, philosophical, theological, and alchemical aspects of Newton's work are intertwined. But, even granting the existence of the concealed texts, important questions remain: Why would Newton have incorporated these teachings into the *Principia*? Why would he have hidden them rather than revealing them openly? And to whom are they addressed?

The first hidden text is particularly perplexing. Even as mounting evidence persuaded me that it must be there, I had no ready answer to the question why someone absorbed in the relatively hasty composition of such a difficult and time-consuming work would (or even could) have taken the time and trouble to construct it. And yet perhaps it is not so surprising. The language of symbol and allegory would have been second nature to a man so thoroughly steeped in the interpretation of alchemical and theological texts. Incorporation of allegory and symbolism into his own text would not have required inordinate effort. More importantly, while for readers of the *Principia*, the hidden texts might seem to be subsidiary to the open text—if they are seen at all—for its author the relationship would have been the reverse. The esoteric texts are not appendages to the exoteric text; they are, instead, its foundation. There were certain things Newton was not disposed to doubt and he held certain convictions he would not deign to explain. In 1676, for example, in a letter to John Collins, after asserting what he realized was astonishing power and generality for his method of fluxions, Newton wrote, "This may seem a bold assertion because it's hard to say a figure may or may not be squared or compared with another, but it's plain to me by ye fountain I draw it from, though I will not undertake to prove it to others" (*Correspondence*, 2: 180). The symbolic texts allow Newton to incorporate into his masterwork the certainty which was the source of his amazingly fruitful vision of the

world, without having also to prove its existence to others. They proclaim the glory of God suffusing both the universe and the souls of men: the ground of Newton's assurance that the pursuit of knowledge through experimental and mathematical means is the proper vocation of humankind.

So did Newton include the hidden texts as a prayer of thanksgiving to God, or perhaps as a personal meditation, without intending them to be visible to others? I do think that expression of his deepest beliefs at the heart of his greatest work must have been a balm to the lonely soul of its author. Newton had an attentive niece, devoted disciples, sympathetic colleagues, and even friends; but he had no peers. His manuscripts with their repeatedly suppressed declarations and speculations tell the story of an individual tormented by the conflict between the aching desire to share his convictions and the conviction that he could not do so. The "classical" scholia, parts of which I have quoted above, serve as a particularly poignant example of this struggle, which he finally settled by not including them in the *Principia*. The hidden texts, thus, help resolve what must have been nearly unbearable tension. Newton would have known that, whatever their fate as far as the rest of the world was concerned, they were there as his testimony of faith.

Nonetheless, it seems impossible that he concealed texts in the *Principia* simply for his solitary satisfaction. There are abundant indications within the work that signal the existence of the first hidden text, while the remarks cited concerning comets are in plain sight of anyone who reaches the end of Book 3. Moreover, Newton himself, in the General Scholium, calls our attention to the relation between God and natural philosophy in a way that, when read only in the light of the surface text of the *Principia*, is more puzzling than enlightening. The extended discourse on God, located at the center of the General Scholium, is, frankly, shocking. It bursts through the surface of the text with the force of a pent-up spring, a surging torrent of words, far too powerful and far too passionate to be neatly contained within the book the

*Principia* seems at first to be. And then this ardent outpouring vanishes without a trace, subsiding as suddenly as it began, beneath the sentence: "This concludes the discussion of God, and to treat of God from phenomena is certainly a part of natural philosophy" (943).<sup>44</sup> No one who reads this passage can doubt that its author was a man of exceptional piety, but if he was so very pious (and if he really believed that to treat of God from phenomena is part of natural philosophy), how could he have slighted God in his greatest work? It is true that the *Principia* is a book of experimental philosophy (though there are necessarily few actual experiments in it), and that there is no experiment that will simply prove the existence of God. But, except for a few scattered remarks, God appears to be so utterly absent from the work that—despite the testimony of Richard Bentley's lectures, titled *A Confutation of Atheism from the Origin and Frame of the World*, delivered in 1692 and published in 1693—Newton has been condemned for writing an atheistic book (or, alternatively, commended for writing a secular one).<sup>45</sup> Of course, I have been arguing that God is not at all missing from the *Principia*. On the contrary, anyone willing to admit that this work (like white light, the stone of the philosophers, man, and the universe) may be simultaneously one and many, and able to follow the clues Newton has provided, can see that it is, in fact, filled with God's presence and that we are meant to see that presence.

But if we are meant to see that presence, then why hide the teachings? There are several partial answers to this question. One reason may have been Newton's personality, which has been described by such various terms as prudent, paranoid, modest, arrogant, cautious, suspicious, domineering, fearful, and vindictive. A more important factor in his decision to hide the teachings could have been his particular situation in the context of the political and religious turmoil that was occurring in England during his lifetime. Most importantly, the nature of the teachings

themselves would have determined the form of their presentation.

As for his personality, extreme reticence, whatever its source, was apparently part of Newton's character. Public revelation of any of his work seems often to have required a struggle with himself as well as with others; most of what he wrote, by far, he did not publish. But a simple appeal to character does not really resolve the issue, for in the works he did publish Newton was not always quite so reluctant to reveal his beliefs as he was in the *Principia*. In the *Opticks*, for example, published during his lifetime in six editions (three in English, in 1704, 1717/18, and 1721; two in Latin, in 1706 and 1719; and a French translation in 1720), he wrote increasingly openly of his hopes and speculations regarding natural philosophy, though he still disguised them (however transparently) as queries. He first published the *Opticks*, however, after the death of his nemesis Robert Hooke in 1703 and his own ascent to a position of fame and power as author of the *Principia* and president of the Royal Society, and at a time when he was becoming more conscious of the need to leave his work for posterity. Openness had also characterized his early "New Theory about Light and Colours." But the tone of ingenuous excitement in which on January 18, 1672 Newton (who was not yet 30 years old) described his discovery of the nature of light to Henry Oldenburg as "in my Judgment the oddest if not the most considerable wch hath beene made in the operations of Nature" (*Correspondence*, 1: 82-3) is one he never again employed publicly. Instead, burned by the hostility that work aroused, he designed his *Principia* to ensure that the expression of his deepest passions and convictions would be visible only to like-minded readers.

Newton's penchant for secrecy, however, was not simply (and perhaps not even primarily) a matter of character. He had compelling external reasons to conceal his theological, philosophical, and alchemical beliefs. With respect to

theology, in the General Scholium to the *Principia* Newton finally affirms the strict monotheism and the vision of God as Παντοκρατωρ that underlie his work, though with characteristic discretion he eschews the scorching anti-Trinitarian diatribes he allowed himself in his unpublished manuscripts. But by the time the second edition of the *Principia* was being prepared—and the General Scholium was Newton's final addition to that edition—its author was Sir Isaac, secure in his renown; and the *Principia* was so highly regarded that it had practically become a sacred text itself. Had the unknown Cambridge professor expressed his dangerously unorthodox beliefs in 1687, he would have risked his career if not his life (for religious heterodoxy was a capital offense in England at the time). Moreover, the peril of confessing such beliefs did not abate during Newton's lifetime. He was a member of the Convention Parliament of 1689, which declared equally illegal the Roman Catholicism he loathed and the Arianism he held.<sup>46</sup> Newton could reasonably conclude that open acknowledgment of his religious convictions would have put his entire philosophical program at risk. At the very least it would have provided for a lifetime of distraction, as he would have been forced to engage in endless discussion and defense of his beliefs. He had better things to do.

Newton had good reasons, as well, not to proclaim his unorthodox philosophical convictions in the *Principia*, closely tied as they were to his heterodox theology. He believed that the existence of gravity had been made manifest through its effects as revealed in the *Principia*, and that such revelation, as he wrote in the General Scholium, was—indeed, had to be—enough for now. Throughout his long life he repeatedly tried to claim the right to say that he did not know the cause of gravity, insisting (as had Galileo) that knowledge of causes was not necessary for the pursuit of natural philosophy. In fact, Newton was convinced that requiring that causes be known, or hypothesized, before effects could be studied stifled philosophical progress.<sup>47</sup> In the

General Scholium, after his often quoted assertion that he does not feign hypotheses, Newton continues: “For whatever is not deduced from the phenomena must be called a hypothesis, and hypotheses, whether metaphysical or physical, or based on occult qualities, or mechanical, have no place in experimental philosophy” (943). This statement—in addition to neatly equating, in terms of their uselessness, the metaphysical with the physical and the mechanical qualities that the Cartesians held with the occult qualities which to them were anathema—stakes out Newton’s philosophical position on this issue. He publicly refuses to attempt to explain gravity, and, with the authority of the *Principia* behind him, he goes on to declare that a search for its cause is, at best, beside the point.

But his protestations were not accepted by the mechanical philosophers. Surely the heat with which they attacked him was due in part to their understandable suspicion that he thought he knew the cause of gravity, and that it was not mechanical; for it was quite clear that impulse was unable to account for universal gravitation. Explanation of gravitation, therefore, seemed inevitably to require acceptance of a doctrine of attraction, of action at a distance, of a force that was, to use their heavily-laden word, “occult.”<sup>48</sup> Newton would readily have admitted that the workings of gravity were occult—in the simple sense that we do not know exactly how God does it. But he could never have satisfied the strict mechanical philosophers on this point, no matter what he said, for conservation of the universe as Newton understood it required active force;<sup>49</sup> and any admission of a non-mechanical cause into the universe was unacceptable to those who held that the physical world could only be intelligible in terms of matter and motion alone. If Newton harbored personal beliefs about God’s active role in the universe, he also realized that it would have been foolish for him to express openly in the *Principia* convictions for which he could not supply experimental evidence. Wisely, he designed the surface text of the book to preclude speculation about

causes. The deeper teachings—composed in a language not susceptible to argument—were reserved for those who could appreciate them.

As concerns Newton’s alchemical quest, as well, there were abundant reasons not to reveal it openly in the *Principia*. Again, one was the character of the open text as its author constructed it, for if he had no demonstrable evidence of the cause of gravity he had no demonstrable evidence even of the existence of the forces he sought so avidly through alchemy. Newton seems to have read alchemical texts with the same intent with which he read all texts: seeing their deliberately deceptive exposition and dense symbolic enigmas as expressions of a single truth uniting nature and revelation, obscured by a veil that could be penetrated by interpretation, which in this case was aided by the experimentation at which he was so adept. Whatever the philosophers’ stone may have meant for other alchemists, for Newton I believe achievement of the stone would have been the culmination of his life’s work: it would have meant the acquisition through experimental means of that truth which he sought so very intensely. As early as the first edition of the *Principia*, Newton struggled with the desire to reveal his alchemical pursuits, writing in the Preface, after describing the procedure he would follow in the book:

If only we could derive the other phenomena of nature from mechanical principles by the same kind of reasoning! For many things lead me to have a suspicion that all phenomena may depend on certain forces by which the particles of bodies, by causes not yet known, either are impelled toward one another and cohere in regular figures, or are repelled from one another and recede. Since these forces are unknown, philosophers have hitherto made trial of nature in vain. But I hope that the principles set down here will shed some

light on either this mode of philosophizing or some truer one. (382-3)

As usual, however, he resolved that the open text of the *Principia* was not the proper place for conjectures, no matter how fervently he may have held them. This brief statement of his strong suspicion and hopes and a few speculations in the last paragraph of the General Scholium, which he cut short for lack of experimental evidence, are as close as he comes to openly stating his chemical aspirations in that work.<sup>50</sup>

Failure to obtain experimental evidence for chemical forces might have been sufficient motive for Newton to withhold open acknowledgment of those aspirations, but there were other cogent reasons for discretion, as well. Newton surely considered himself among the philosophical alchemists, for, unlike the puffers or smoke-sellers, whose base activity the philosophical alchemists universally decried, he was surely not interested in acquiring personal power or amassing wealth through chicanery. Nevertheless, he knew that alchemists were widely considered to be rogues and conjurors and as such were both ridiculed and feared. Therefore, in personal terms, there was much to be lost and nothing to be gained by publicly espousing alchemy. In practical terms, serious alchemists considered the power they hoped to achieve too dangerous to be proclaimed openly to an imperfect world, a constraint that we know Newton respected.<sup>51</sup> And finally, the philosophical alchemists were engaged in a spiritual quest for purification and perfection, which they also called healing, not only of metals but also of their own souls. True philosophical alchemy required a relationship between the practitioner and his God wherein the success of the work depended at least as much upon the state of the alchemist's soul as upon his facility in deciphering texts or his dexterity in following procedures. The one thing serious alchemical writings make perfectly clear is that only the pious and pure of heart will be able to discern the proper proportions of materials, the correct degrees of heat for each part of the procedure, and the precise timing necessary to

perfect the work.<sup>52</sup> Achievement of the philosophers' stone would have been a gift of God awarded to one who merited it. Open acknowledgment of engagement in this intense and intimate quest would have been not only foolhardy but also impious.

There are, then, abundant negative reasons for Newton to have hidden his theological, philosophical, and alchemical beliefs; but there is also a powerful positive argument for including those beliefs in the form of concealed texts. Newton seems to have considered, repeatedly, the possibility that the world was ready for him to reveal, in his own name, the convictions he held. And every time he considered that possibility, he rejected it. He, therefore, took his place as a member of a distinguished secret fraternity long engaged in the task of seeking the truth and revealing it in a dual manner: each work simultaneously expounding one text for the many, and another, through symbols and figures, for the few.<sup>53</sup> He believed that the alchemists, the ancient sages, and the inspired writers of the Holy Scriptures—recognizing the peril to themselves and quite possibly to others of openly displaying their true convictions in unsettled times like those in which he was living—had conveyed their mystical teachings in metaphors, fables, allegories, images, parables, and prophecies, as well as numerological and esoteric geometrical symbolism. All of their texts, like the book of nature itself, required interpretation. Newton understood the worth of his Book of Principles. Why should it differ in this respect from the world-changing works that preceded it? In his remarkable passage about God in the General Scholium, Newton comes close to expressing in words the vision of the concealed texts. But the full force of mystical belief cannot be conveyed in everyday language, corrupted by the Fall and confined by what Newton called its “unavoidable narrowness” (McGuire, 199). Newton had numerous reasons not to express his mystical teachings openly, but he also had a powerful reason to express them in the way he did: Symbolism is their proper language.

An unavoidable, and perhaps uncomfortable, consequence of this reading is the recognition that not all of the teachings in the *Principia* were meant for everyone (though the shock of this realization should be attenuated by recalling that the book is a restricted text at every level). But if the teachings were not meant for everyone, to whom were they addressed? Clearly, Newton wanted others to continue the work he had begun. He published and repeatedly revised both the *Principia* and the *Opticks* in the interest of promoting the development of natural philosophy, which, he told Conduitt toward the end of his life, he felt the comfort of having left less mischievous than he found it. But, aside from those two books, he seems to have cared so little (or perhaps, in some cases, feared so much) what his contemporaries would think of his work that he preferred not to publish it during his lifetime, particularly if publication meant that he would be hounded and pestered by critics.<sup>54</sup> On the other hand, he cared very deeply that his work be preserved and, furthermore, that others know that it was his. Both his reluctance to publish and his wounded outrage—when his originality, at least with respect to his fellow moderns, was assailed (as by Hooke); or his work, to his mind, was hindered (as by Flamsteed); or his priority and even his probity were challenged (as by Leibniz)—may be partially understood if we realize that Newton considered the intellectual community to which he belonged to be temporal.<sup>55</sup> In the concealed texts Newton was addressing primarily those he would consider his true intellectual heirs. Those philosophers, carrying on the task of improving natural philosophy and presumably familiar with its venerable dual tradition, would be able to see and recognize the true foundation of the work in which they were engaged.

For Newton knew that the work was not complete. Although he recognized that his remarkable achievements had reached new heights of natural philosophy, he was also well aware that his deepest questions had gone unanswered. There is evidence that when he finished the first edition of the

*Principia*, he still hoped he would find those answers. In the early 1690s he immersed himself in a monumental study of the entire alchemical tradition. He may, as well, have attempted to initiate his young disciple, Nicholas Fatio de Duillier, into his alchemical pursuits. But it came to nothing.<sup>56</sup> In 1693 Newton suffered a breakdown, a mysterious episode which led to rumors on the Continent that he had become permanently deranged or had even died. The onset of this crisis has been attributed—not fully persuasively—to various causes; but equally remarkable (and also unexplained) is its abrupt end. This end was characterized by the full resumption of his sanity—if not of the intense intellectual power that had previously marked his life—only a few months after he wrote the rambling letters to Samuel Pepys and John Locke that were the source of their fears for his state of mind.<sup>57</sup> His failure to unlock the chemical secrets of the universe, despite his fevered attempts to do so, must have been devastating. But Newton finally accepted that he would not be the one to answer those questions. In 1696, at the age of 53, he abandoned his experimental search into the unity of nature and took a position as master of the mint.

Nevertheless, he did not repudiate his earlier failed attempts. On the contrary, he left ample evidence of his ongoing conviction that such unity did exist. This evidence includes his elaboration of the second concealed text in the second and third editions of the *Principia*, as well as his decision to leave both that work and the *Opticks* open, inviting further study and suggesting possible directions for it. Newton also scattered clues to his beliefs outside of the works published in his name. He impressed some of his unpublished views upon the young men whose careers he fostered, and they in turn disseminated them. His disciple David Gregory, for example, in “The Author’s Preface” to his *Astronomiæ physicae & geometricæ elementa* (1702) included a history of astronomy, according to which the laws his great mentor Isaac Newton supposedly was the first to discover had been in fact only rediscovered, as they had been known to the

ancients. In the twentieth century the manuscript of this passage was found among Newton's papers, written in Newton's hand. Newton himself had composed it.

In addition, though he is said to have burned numerous papers in the days before his death, Newton left millions of words concerning the interpretation of history and scripture, as well as his interpretation of alchemical texts and detailed notes on his experiments.<sup>58</sup> As he seems to have left no written account of his reasons for wanting his unpublished manuscripts to survive him, it is impossible to be certain of his motives. One might surmise, for example, that Newton left us his alchemical notes as proof of failure, as evidence that not even he could unlock the chemical secrets of the universe by following that path, and therefore as an indication of precisely how *not* to proceed. But what, then, do we make of the historical and scriptural interpretations that accompany that record? Are we to regard them as repudiated, too? In the absence of a note stating his intent—whose discovery among the manuscripts would be a real coup—it seems likely that he retained hope that another, knowing of his efforts now that he was “out of the way,” could pick up his task of unifying scripture, history, and natural philosophy where he had abandoned it. Newton could not have known that the executors of his estate would label his alchemical writings not fit to print. Nor could he have known that his more radical theological manuscripts would also be deemed unprintable, despite the desire his niece expressed in her will that they be published. Newton, in short, could not have known the extent to which his published work—particularly his *Principia*—like the philosopher's stone he had sought for so long, had begun to transform both the world and himself within it. One of the effects of this transformation may have been to shield the secrecy of its author's convictions after his death more thoroughly than he intended. But he seems not to have cared. Dying intestate, he left the matter in the hands of God, who, he trusted, would allow it to be revealed at the proper time.

For Newton believed the time would come when an improved world would be ready to accept his teachings. In the spirit of the ancient philosophers he most admired, his philosophical aspirations extended beyond the realm of natural philosophy; he trusted that its perfection would lead to that of moral philosophy, so sadly imperfect in the turbulent world he saw around him. The last edition of the *Opticks* ends with the following passage, looking toward progress in natural philosophy, which Newton believed would lead not to a new morality but to a return to pure ancient morality:

In this third Book [for the *Opticks*, too, is divided into three books] I have only begun the Analysis of what remains to be discover'd about Light and its Effects upon the Frame of Nature, hinting several things about it, and leaving the Hints to be examin'd and improv'd by the farther Experiments and Observations of such as are inquisitive. And if natural Philosophy in all its Parts, by pursuing this Method, shall at length be perfected, the Bounds of Moral Philosophy will also be enlarged. For so far as we can know by natural Philosophy what is the first Cause, what Power he has over us, and what Benefits we receive from him, so far our Duty towards him, as well as that towards one another, will appear to us by the Light of Nature. And no doubt, if the Worship of false Gods had not blinded the Heathen, their moral Philosophy would have gone farther than to the four Cardinal Virtues; and instead of teaching the Transmigration of Souls, and to worship the Sun and Moon, and dead Heroes, they would have taught us to worship our true Author and Benefactor, as their Ancestors did under the Government of *Noah* and his Sons before they corrupted themselves. (405-6)

But the outcome of Newton's "method" has been quite other than the unification of natural and moral philosophy he intended. We can never know how things would have been different had his concealed convictions been brought to light before the twentieth century. In the event, his *Principia* was driven like a wedge between reason and faith. Designed to declare the power of the deity in the world and, thereby, to revive and foster both natural and moral philosophy, Newton's masterwork has instead been seen as a monument to the separation between science and religion, as antithetical to the unity of the very traditions of which it was in fact the culmination.

#### 6. Conclusion: The Old Made New

Full fathom five thy father lies;  
Of his bones are coral made;  
Those are pearls that were his eyes:  
Nothing of him that doth fade,  
But doth suffer a sea-change  
Into something rich and strange.<sup>59</sup>

So what then is this *Principia*? To construct his grand vision, encompassing the whole of creation, Newton, of course, drew on his exceptional mathematical ability. But the *Principia* is more than the mathematical and physical treatise—however great—that it appears to be. It is a little world, an artful elaboration of secular and sacred traditions of human knowledge, born both of Renaissance Hermeticism, which was so influential in the development of experimental science in the seventeenth century, and of Newton's faith in a beneficent creator who ruled the universe and who (in the fullness of time) would allow his human creatures to discover and reveal its lawfulness. Behind everything that Newton did was a firm faith in God's providence. All of his work conveys his conviction that we live in a world whose history is the working out of God's great story from the creation to the apocalypse. We humans do not have the power, he thought, nor should we have the desire, to alter

that already-written story; but God has hidden clues to it in both nature and scripture, which some of us may be granted the power to see and understand. The texts concealed in the *Principia*—in their vision of God's glory filling, fertilizing, and illuminating the entire universe and the soul of his disciple—are Newton's grateful acknowledgement of the source of his understanding and also his message to the future; they are the manifestation of his peculiar genius and his true secret art.

I do not intend here to discuss the validity of Newton's vision of the world. My goal in this study has been merely to urge a thoroughgoing reconsideration of his *Principia*, a book that resolutely resists easy classification. Seen as a whole, the work both supersedes, and incorporates, the secular and sacred traditions of learning that preceded it. It is a magnificent product of transformation and circulation, a manifestation at every level of the old made new (and, for that matter, of the new made old). Together with the unparalleled mathematical achievements of the open text, the mystical journey near the beginning of Book 1 teaches us that our minds are capable of ascending to the heavens and beyond, while the cosmic allegory at the end of Book 3 shows us that our bodies are composed of the material and spiritual stuff of the universe. The open text is grounded upon the visions expressed in the hidden texts, and the hidden texts depend for their power upon the open text while extending its domain.

The *Principia*, in sum, speaks to both our intellect and our imagination, addressing our deep human desire to be intellectually, spiritually, and materially at one with our universe. Newton's greatest book is far stranger and far richer than we have ever suspected. A mathematical and physical work of prodigious power, the *Principia* is also an expression of the highest art and a declaration of the deepest love of which this remarkable man was capable.

\*

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## Notes

<sup>37</sup> Isaac Newton's translation of the *Tabula Smaragdina*, the "Emerald Tablet" attributed to Hermes Trismegistus (quoted in Dobbs 1991, 274). The passage continues with some alchemical instructions.

<sup>38</sup> Simpson, too, in the final section of his article, addresses what he calls the astronomical alchemy that comets undergo in their close approach to the sun, which he calls the "furnace of the heavens," a crucible that reaches a temperature unattainable on earth, thus leading to "the emission of that 'spirit' which was always the ultimate objective of the alchemic search and is fundamentally needed in order to complete Newton's account of the true System of the World" (164).

<sup>39</sup> Newton wrote in his *Hypothesis explaining the properties of light*: "For nature is a perpetuall circulatory worker, generating fluids out of solids, and solids out of fluids, fixed things out of volatile, & volatile out of fixed, subtile out of gross, & gross out of subtile, Some things to ascend & make the upper terrestriall juices, Rivers and the Atmosphere; & by consequence others to descend for a Requittall to the former" (*Correspondence*, 1: 366). These sentences were written while Newton still accepted the vortex hypothesis of planetary motion, well before he had any idea of universal gravitation. As he developed the *Principia*, he abandoned the hypothesis of vortices and, indeed, in the *Principia* he takes every opportunity to combat that hypothesis. I believe, however, that the sentiment of the passage survives as a metaphor of the circular chemical processes, moved by gravity, that make life possible.

<sup>40</sup> Actually he had acknowledged it, writing: "The comet that appeared in 1680 was distant from the sun in its perihelion by less than a sixth of the sun's diameter; and because its velocity was greatest in that region and also because the atmosphere of the sun has some density, the comet must

have encountered some resistance and must have been somewhat slowed down and must have approached closer to the sun; and by approaching closer to the sun in every revolution, it will at length fall into the body of the sun. But also, in its aphelion, when it moves most slowly, the comet can sometimes be slowed down by the attraction of other comets and as a result fall into the sun" (937). He does not, however, dwell on the implications of the predicted collision for life on earth, but moves directly on to his remarks about supernovae to which Conduitt called his attention in their conversation.

<sup>41</sup> This image appears in the *Opticks*, as well. In Query 30, one of those added to the Latin and later English editions of that work, Newton muses about the convertibility of light and gross bodies into one another, writing, "The changing of Bodies into Light, and Light into Bodies, is very conformable to the Course of Nature, which seems delighted with Transmutations" (374), and, later, "All Birds, Beasts and Fishes, Insects, Trees and other Vegetables, with their several Parts, grow out of Water and watry Tinctures and Salts, and by Putrefaction return again into watry Substances. And Water standing a few Days in the open Air, yields a Tincture, which (like that of Malt), by standing longer yields a Sediment and a Spirit, but before Putrefaction is fit Nourishment for Animals and Vegetables. And among such various and strange Transmutations, why may not Nature change Bodies into Light, and Light into Bodies?" (375). Like the alchemical allegory at the end of the discussion of comets in the *Principia*, these passages were written after their author had abandoned alchemical experimentation.

<sup>42</sup> Quoted in Waite, 1: 75.

<sup>43</sup> There are exceptions: notably Alexandre Koyré, I. Bernard Cohen, and Richard Westfall. But Westfall, who has produced the most comprehensive account of Newton's life and work, admits with frustration that during two decades of study Newton became ever more of a mystery to him. In a modern version of the opinion of the Marquis de l'Hôpital—who wondered if Newton ate, drank, and slept like other men or was truly the god he seemed—Westfall concludes that there is no measure for Newton, that he is wholly other. I do not agree; but I do believe that until we acknowledge the texts hidden in the *Principia* we will never understand its author.

<sup>44</sup> *Et hæc de deo, de quo utique ex phænomenis disserere, ad philosophiam naturalem pertinet* (764). This quote is from the third edition of the *Principia*. In the second edition Newton states that to discourse of God is the business of experimental philosophy, a statement which makes even more perplexing the apparent absence of God from this particular book. Newton seems to have thought better of that claim, for he changed it in the final edition. Larry Stewart contends that the General Scholium "was

written, and certainly perceived to have been written, with an eye to the difficulties and the defence of the anti-Trinitarianism of his disciple Samuel Clarke" (145-6). It is not clear to me why Isaac Newton would have used his masterwork as a tool to defend Samuel Clarke, though it is possible, as Stewart claims, that the General Scholium was (at least to some degree) a salvo fired against societal assault on experimentalism. If Stewart is right we find ourselves presented with yet another case in which Newton manages to say what he means in a veiled manner.

<sup>45</sup> The scholium following the Definitions does mention "Scriptures," (414) which is Cohen and Whitman's translation of the Latin "sacris literis" (52). And the first edition of the *Principia* contains (in Corollary 5 to Proposition 8 of Book 3) the following sentence: "*Collocavit igitur Deus Planetas in diversis distantiiis a Sole, ut quilibet pro gradu densitatis calore Solis majore vel minore fruatur*" (583). Corollary 5 was excised from the later editions, and some of its content was included in Corollary 4. But Newton replaced "God placed . . ." with "the planets were to be placed. . ." (Cohen 1969, 529-30). This, by the way, is further evidence that Newton's use of the passive voice in the *Principia* is deliberate and significant. Cohen argues, I think rightly, that these passing references are indications that Newton was thinking of God all along, as he constructed every edition of the *Principia*.

<sup>46</sup> During Newton's lifetime, refusal to accept the doctrine of the Trinity could lead to prison; in 1696 a man was hanged for denying that article of faith. Moreover, open expression of unorthodox beliefs was costly to some of Newton's disciples. Edmond Halley's supposed atheism, for example, cost him the Savilian professorship of astronomy at Oxford University, which was awarded to David Gregory, another protégé of Newton, who apparently was scarcely more religious than Halley, though he was more discreet about his heterodoxy; and William Whiston lost his position as successor to Newton in the Lucasian professorship of mathematics at Cambridge University for espousing religious views similar to those Newton held. Newton, of course, considered the Trinitarians to be the real heretics, and at crucial times in his life he refused to compromise his beliefs. He was willing to sacrifice his appointment to Cambridge University rather than take the requisite holy orders; he fought hard and successfully against appointment by King James II of a Benedictine monk to the university (though in this case the grounds were Roman Catholicism rather than Trinitarianism as such); and on his deathbed he refused the sacrament of the church. Nonetheless, he attended church services occasionally; and he supported the Anglican Church. I doubt that his intent in doing so was merely to disguise his true convictions in order to protect his reputation. Newton would have regarded the Church of England as a valuable bulwark against the political and religious encroachments of the Roman Catholic Church, which he called the

Whore of Babylon, and which he identified in his *Observations on the Prophecies of Daniel and the Apocalypse of St. John*, published posthumously in 1733, as the little horn of the fourth beast prophesied in the Book of Daniel.

The widespread social upheavals of the time may also have influenced Newton's decision to be circumspect about his theological beliefs. David Kubrin, in his article "Newton's Inside Out!" speculates that the reason he censored himself and repressed his insights, ideas, visions, and grand plan of the cosmos, "was largely social, and stemmed from the fact that Newton realized the dangerous social, political, economic, and religious implications that would be associated with him should he dare reveal his true thoughts" (97). Though Kubrin focuses on the social aspects of Newton's ideas, his claim is reminiscent of Law's assertion that Newton did not reveal his supposed indebtedness to Boehme because he did not want to be associated with enthusiasm.

<sup>47</sup> Descartes, for example, criticizing Galileo's method in his *Discorsi*, had written to Mersenne, "Nothing that he says here can be determined without knowing what gravity is" (October 11, 1638, quoted in de Gandt, 118). If Newton had waited to know what gravity was before writing the *Principia*, the book never would have been written.

<sup>48</sup> Newton considered action at a distance, in a universe containing only matter, ridiculous, for he did not believe that brute matter could act in any way at all. In Rule 3 of Book 3 of the *Principia*, added in the second edition (Koyré, 268), he explicitly repudiates the notion that gravity is inherent in matter. In his third letter to Richard Bentley, he expressed this conviction even more strongly, writing: "That gravity should be innate inherent & essential to matter so yt one body may act upon another at a distance through a vacuum without the mediation of any thing else by & through wch their action or force may be conveyed from one to another is to me so great an absurdity that I beleive no man who has in philosophical matters any competent faculty of thinking can ever fall into it" (*Correspondence*, 3: 254).

<sup>49</sup> As he wrote to Bentley, "Gravity must be caused by an agent acting constantly according to certain laws, but whether this agent be material or immaterial is a question I have left to ye consideration of my readers" (*Correspondence*, 3: 254).

<sup>50</sup> Further evidence for Newton's struggle with himself over this issue, as well as his awareness of the effects revelation of his beliefs would have had on others' perceptions of both himself and his work may be seen in a draft of a Proposition 18 (crossed out and relabeled Hypothesis 2), which he wrote after finishing the first edition of the *Principia*. This hypothesis, which was to have been part of a general conclusion to the *Opticks*, reads: "As all the great motions in the world depend upon a certain kind of force (which in this earth we call gravity) whereby great bodies attract

one another at great distances: so all the little motions in the world depend upon certain kinds of forces whereby minute bodies attract or dispell one another at little distances.” He refers to his demonstration of universal gravitation in the *Principia*, and continues: “And if Nature be most simple & fully consonant to her self she observes the same method in regulating the motions of smaller bodies which she doth in regulating those of the greater. This principle of nature being very remote from the conceptions of Philosophers I forbore to describe it in that Book least I should be accounted an extravagant freak & so prejudice my Readers against all those things which were the main designe of the Book: but & yet I hinted at it both in the Preface & in the Book it self where I speak of the inflection of light & of the elastick power of the Air but the design of the book being secured by the approbation of Mathematicians, I had ~~not~~ scrupled to propose this Principle in plane words. The truth of this Hypothesis I assert not, because I cannot prove it, but I think it very probable because a great part of the phenomena of nature do very easily flow from it which seem otherways inexplicable: . . .” (quoted in Cohen 1982, 63) He goes on to list some of the phenomena he has in mind. Newton repressed but did not destroy this remarkable statement.

<sup>51</sup> We know that Newton admitted the possibility that this fear was well founded because of a letter he sent on April 26, 1676 to Henry Oldenburg, Secretary of the Royal Society, regarding a question raised by a “B. R.” (Robert Boyle) in the *Philosophical Transactions* whether he should publish the recipe for a mercury that heated gold when mixed with it. Newton stated that he doubted that this particular mercury could be useful “either to medicine or vegetation.” Then he continued:

But yet because the way by which mercury [Newton here places an alchemical symbol instead of the word] may be so impregnated, has been thought fit to be concealed by others that have known it, & therefore may possibly be an inlet to something more noble, not to be communicated without immense dammage to ye world if there should be any verity in ye Hermetick writers, therefore I question not but that ye great wisdom of ye noble Authour will sway him to high silence till he shall be resolved of what consequence ye thing may be either by his own experience, or ye judgmt of some other that throughly understands what he speakes about, that is of a true Hermetic Philosopher, whose judgmt (if there be any such) would be more to be regarded in this point then that of all ye world beside to ye contrary, there being other things beside ye transmutation of metals (if these great pretenders brag not) wch none but they understand. Sr because ye Author seems desirous of ye sense of others in this

point, I have been so free as to shoot my bolt; but pray keep this letter private to your self. (*Correspondence*, 2: 2)

Newton and Boyle engaged for years in a correspondence about alchemical research, which itself was typically guarded in the manner of alchemical writers who rarely revealed everything even to sympathetic correspondents. Few of these letters survive, but in a letter of August 2, 1692 to his friend John Locke, who shared Newton’s interest in theological and alchemical pursuits, Newton observes, and respects, Boyle’s “reservedness” about revealing a certain recipe, a restraint he speculated might have proceeded from his own (though he does seem somewhat miffed that Boyle is being quite so reserved with respect to *him*). (*Correspondence*, 3: 218)

<sup>52</sup> Newton himself, in his old age, implied as much in a conversation with John Conduitt, stating that, “They who search after the philosophers’ stone by their own rules [are] obliged to a strict and religious life” (quoted in Dobbs 1975, 15; also see Iliffe, 1: 178).

<sup>53</sup> In one of the “classical” scholia, which Newton decided not to include in the *Principia*, after writing of the analogy the ancients made between the harmony of musical strings and the weights of the planets, he continues: “But the Philosophers loved so to mitigate their mystical discourses that in the presence of the vulgar they foolishly propounded vulgar matters for the sake of ridicule, and hid the truth beneath discourses of this kind” (McGuire and Rattansi, 117). I am not claiming that Newton considered the surface text of the *Principia* to be a vulgar matter foolishly propounded for the sake of ridicule. My claim is merely that in emulation of the ancient philosophers he composed the work as a layered text.

<sup>54</sup> As early as 1676, reacting in part to the criticism that followed his 1672 publication on light, Newton wrote to John Collins, who had urged him to publish his method of fluxions:

You seem to desire yt I would publish my method & I look upon your advice as an act of singular friendship, being I beleive censured by divers for my scattered letters in ye *Transactions* about such things as nobody els would have let come out without a substantial discours. I could wish I could retract what has been done, but by that, I have learnt what’s to my convenience, wch is to let what I write ly by till I am out of ye way. (*Correspondence*, 2: 179)

<sup>55</sup> Special circumstances, among them Newton’s own character and that of his adversaries, influenced the particular course of each conflict, but it seems plausible that, as far as Newton was concerned, they all had the

same ground. The perception that the importance of his work was historical could also go some way toward explaining the numerous portraits of himself he commissioned. Further, it sheds light on his willingness in his later life to let others carry on the controversies his work aroused, rather than entering them himself until they touched his reputation too closely, at which point he would join the fray, but usually anonymously. This tactic was not unique to Newton, but it may have been unusually powerful in his case, as in later life he was able to speak with the voice of the Royal Society. He allowed Roger Cotes to write an explanatory introduction to the second edition of the *Principia*, but he refused to read it, so as not to be asked to clarify or defend it. He did not want his peace to be disturbed by the obligation of justifying his work to anyone.

<sup>56</sup> During the same years that he was making, and failing at, his final alchemical attempts he may have contemplated excision of the first hidden text from the *Principia*. Whether we think he did depends upon how we read David Gregory's notes and Newton's own manuscripts of proposed alterations to the book. In any event, if he considered dismantling that text, he did not do it.

<sup>57</sup> The letter to Pepys was dated September 13, 1693 (*Correspondence*, 3: 279), and the letter to Locke three days later (*Correspondence*, 3: 280). On September 28 Pepys' nephew John Millington visited Newton in Cambridge and was able to report to his uncle that, though "under some small degree of melancholy," he seemed quite sane as well as "very much ashamed" at the rudeness of the letter, which Newton himself characterized as "very odd" (*Correspondence*, 3: 281-2). In a letter of October 3, Newton apologized to Locke, explaining that "by sleeping too often by my fire I got an ill habit of sleeping & a distemper wch this summer has been epidemical put me further out of order, so that when I wrote to you I had not slept an hour a night for a fortnight & for 5 nights together not a wink" (*Correspondence*, 3: 284).

<sup>58</sup> Rattansi estimates that Newton wrote 1,300,000 words on theological and biblical subjects (167), and Westfall estimates that notes and compositions on alchemy in Newton's hand exceed 1,000,000 words (1980, 163).

<sup>59</sup> Shakespeare, *The Tempest*, Act I, Scene 2.

## "The Things of Friends are Common"

Christopher B. Nelson

I came to a startling realization over the summer as I was preparing to greet our newest class: that I had returned to this college to take the position I now hold in the year in which most of our incoming freshmen were born. The years have passed quickly, it seems to me now, and my appreciation for the community of learning I joined back then has grown as my friendships within the community have deepened. I think I became a wee bit sentimental as I ruminated upon my first year as a student at St. John's more than forty years ago. My Greek has gone rusty, but as with most all of memory, the things learned first are remembered best, and I have kept with me over the years two Greek sentences I recall reading in my first days at the college: *χαλεπὰ τὰ καλὰ* and *κοινὰ τὰ τῶν φίλων*.

The first can be roughly translated as "Beautiful things are difficult" or "Noble things are difficult." The second can be translated as "The things of friends are common" or "What friends have, they have in common." Back in the days of my youth the College used a different Greek grammar book, so this last week I took a peek at the Mollin and Williamson *Introduction to Ancient Greek*, with which our students now begin to learn Greek. And there they were, the same two sentences, buried in an early lesson on the attributive and predicate position of the definite article, and I rediscovered something I once must have known about the two sentences, something I had carried with me all these years: they are both nominal sentences with the article *τά* in the predicate position, making it possible to write intelligible, whole

sentences without the use of a verb. I was pretty sure I had not committed these sentences to memory because of the substantive-making power of the article τὰ. It's more likely that I remembered them because they were both quite short, and perhaps because they appeared to carry a mystery and a whiff of truth in them that I might untangle for myself if only I worked on them long enough. I felt justified in this interpretation when I read in this new text that “nominal sentences are best suited to the impersonal and timeless character of maxims or folk-sayings” (31).

I wanted to understand better the little maxim κοινὰ τὰ τῶν φίλων, “The things of friends are common.” The sentence seemed to capture a beautiful thought, and I had the notion that if I made the effort to understand this maxim better, I also might come to see why “beautiful things are difficult.” Two birds, one arrow—so to speak.

So, I begin my reflection by asking whether this little maxim means that friends share what they have, or that they ought to share what they have. Today, I give you half of the lunch I packed for us both, and tomorrow you will share yours with me. But the sandwiches we eat are hardly common to us both; quite the opposite, they are rationed out separately to each of us, albeit equally. We may each have an equal share in a good thing, but not a common good. We each consume what the other does not and cannot consume. So it is with all sorts of goods, earthly goods, goods that are external to us; what I give to you in the spirit of sharing with a friend is something I will no longer have after giving it. I will have less of it after sharing it than I did before I shared it, however good and generous my act of friendship has been, and however much I imagine I may have gained in the improvement of my character by sharing.

But what, then, are the things that could be common to friends? What kinds of things can truly be held in common without having to be meted out among friends? I suppose things of the soul are of this nature, things that belong to the heart, the spirit, the mind, things that belong to our inner

lives. We both may love a single object or person without our having to share that love as we might share the expense of a gift to the beloved one. My love doesn't grow less because you love too. And, of course, if we should actually love one another, that love is surely greater and stronger for it being reciprocated and reinforced over and over. So it is with things of the intellect. When I learn something you have shared with me, it does not pass from you to me like milk from a pitcher; you have lost nothing, and yet I have gained something that is now common to us both. The sum of what is common to us has just grown; it has not been redistributed. And should we together go about learning something new, we will each be richer for what we come to have in common.

In pursuing such learning together we enter a whole new community. For example, when we learn Euclid 1.47—the Pythagorean theorem—each of us has it wholly but neither of us possesses it. We now have something that belongs to us, but not merely privately; we have gained something that is common to us both, and in learning it we enter the community of all who have learned it. This perhaps is why we say “things in common” belong to “friends”: the soul is not a wholly private place, but is able to enter this sort of community with others.

But there is an added dimension that I think has something to do with the reason we seek these common things. We are moved to love something because it is beautiful, or to love some person because he or she is beautiful to us. We seek to know something because we believe that knowing is better than not knowing, that this knowledge will be good for us, perhaps even that it can be turned to good in the world about us. These things we have in common are beautiful and good things, and we wish beautiful and good things for our friends. If the common goods are those that increase our community by pursuing them together, then the greatest acts of friendship must be the searching together for such a common good.

St. John's College exists for this purpose: to provide a place and countless opportunities for our students to pursue together the common goods of the intellect. We call ourselves a community of learning, aware that the word "community" in English, as in Greek, has the same root as the word "common." We make many an effort to put into practice the conviction that we learn best when we learn with others, who like us, wish to increase the common good. Such a community offers some pretty fine opportunities for friendship.

We also have a common curriculum that has us all reading books that are worthy of our attention, even of our love—books written by men and women who were themselves model fellow learners. The books and authors may even become our friends, as can the characters in some of these books. If incoming students have not already met the Socrates of Plato's dialogues, they soon do, and they spend a lot of time with him in the freshman year. For some of them it is the beginning of a lifelong friendship with a character with whom—if open to the possibility—one can converse over and over again. The words on the page may remain the same, but the reader brings a new conversationalist to the text every time he or she returns to the dialogue. At least, so it is with me. I call Socrates a friend of mine because I know that he seeks only my own good. He has taught me humility, inasmuch as I possess it all.

I have many such friends in the Program. Some of them are books. Homer's *Iliad* has been my companion since the seventh grade, and I never tire of returning to it. The *Aeneid* has become a more recent friend who has helped me to understand and better bear the responsibilities of fatherhood and the trials of leadership. The Books of Genesis and Job have helped me understand what it means to be human and how great is the distance between the human and the divine; I read them to remind me how little I really understand about the relation between the two, which in turn serves as a spur to seeking to understand better. Euclid's *Elements* may be the

finest example on the St. John's Program of the practice of the liberal arts, and it is beautiful for its logical, progressive movement from the elemental to the truly grand. Plato's *Republic* is the finest book about education ever written; it inspires much of what I do as I practice my vocation at the College, reminding me that a community of learning is reshaping and refounding itself any time a few of its members come together to engage in learning for its own sake—and that this is what we ought always to be encouraging at this college, even by device when necessary.

Other friends of mine are authors: Sophocles, who can evoke a human sympathy to inspire pity in each of his dramas; George Washington, whose restraint in the use of power is evident in his finest writings and in the mark he left on the founding of this country; Abraham Lincoln, whom I consider this country's finest poet, whose very words reshaped what it meant to be an American; Jane Austen, whose every sentence can be called perfect (and so she is a beautiful author to me); and Martin Luther King, who taught me that non-violent protest is more than a successful tactical measure to achieve a political end, but a proper and loving response to the hateful misconduct of fellow human souls.

Then there remain the characters whom I embrace as friends: besides Socrates, there is Hector, Breaker of Horses, "O My Warrior"; and Penelope, who weaves the path that allows Odysseus to return home, and is far worthier of his love than he of hers. There is Don Quixote, the indomitable spirit, and *Middlemarch's* Dorothea Brooke, whose simple acts of goodness change the whole world about her. I rather like Milton's Eve, mother of us all, who still shines pretty brightly in the face of his spectacular Satan. I was a teenager when I met Shakespeare's Prince Hal, and I grew to adulthood with him, probably following a little too closely his path to responsibility. There's the innocent Billy Budd, unprepared to face the force of evil in man, and his Captain Vere, the good man who suffers to do his duty.

The Program also offers some reflections on friendship: every winter, Aristotle provides freshmen with a framework for considering different kinds of friendships and the goods they afford. Perhaps they will find his list incomplete, or perhaps their own experiences will be embraced by his explanation. And then there are examples of friendships, pairs of friends in many of the books, who will also provide lessons in friendship, for better or worse: Patroclus and Achilles, David and Jonathan, Hal and Falstaff, Huck and Jim, Emma and Knightley, to name a few.

We journey through the Program with the assistance of many friends, some of whom live among us here and now, while some others live on in the books we read during this four-year odyssey. They help us as we struggle with the big questions that in turn can help to free each of us to live a life that truly belongs to us. It is these friends, standing close by, who help us to find our answers to the questions: Who am I? What is my place in the world? How ought I to live my life? One of my more beautiful living friends, a colleague here at the College, has put it this way: "Our friends are doubly our benefactors: They take us out of ourselves and they help us to return, to face together with them our common human condition" (Eva Brann, *Open Secrets/Inward Projects*, 55).

Another of my friends, a St. John's classmate and medical doctor, gave last year's graduating class in Santa Fe this reminder, that we can learn from our friendships with the books how we might be better friends to one another: "So often we make shallow and inaccurate presumptions about people, like the cliché of telling a book by its cover, which robs you of the deeper experience that defines us as humans in our relationship to each other. For me every patient is a great book with a story to tell and much to teach me, and I am sometimes ashamed when my presumptions are exposed and I then see the remarkable person within, between the covers of the book of their own story." This doctor has devoted himself to saving the lives of patients suffering from cancer, and he has this to say about how he is guided by the

spirit of community and friendship within the soul of every human being: "In my own work, it is sometimes said, we are guided...by the idea that to save a person's life, it is considered as if one has saved the world. To me that has always meant the life saved is much more than a single life restored, as that person is someone's spouse, someone's brother or sister, someone's parent, or child, a member of the community, of a church, synagogue or mosque, or a friend, and as all are affected by loss, all are restored by their return." (Stephen J. Forman, 2009 Commencement Address, Santa Fe). This statement is a powerful testament to the wonder of friendship at work in the world.

In this last story, I have moved us away from the inner world of reflection and learning to the outer world of putting what one has learned to work in a life devoted to helping others. The second must always follow the first. By this, I mean that we owe it to ourselves and to others to take advantage of the opportunities this community offers to learn with our fellow classmates and tutors how we might acquire a little self-understanding through the common endeavor we practice here, before going out and putting it to work in the world. And in the process, perhaps we will make a few friends who will stay with us for the rest of our lives, enriching them because "what friends have they have in common."

This little nominal sentence, κοινὰ τὰ τῶν φίλων, happens to be the penultimate sentence in one of Plato's dialogues, *Phaedrus*, which is the only book read twice for seminar, at the end of both freshman and senior years. Phaedrus and Socrates have engaged in the highest form of friendship as they have conversed together to try to understand how a man or woman might achieve harmony and balance in the soul by directing that soul to a love for the beautiful. Socrates concludes the inquiry with a prayer to the gods:

Friend Pan and however many other gods are here,  
grant me to become beautiful in respect to the  
things within. And as to whatever things I have

outside, grant that they be friendly to the things inside me. May I believe the wise man to be rich. May I have as big a mass of gold as no one other than the moderate man of sound mind could bear or bring along.

Do we still need something else, Phaedrus? For I think I've prayed in a measured fashion?

To which Phaedrus responds:

And pray also for these things for me. For friends' things are in common. (279B – C, trans. Nichols).



## “My Subject is Passion”: A Review of Eva Brann’s *Feeling our Feelings*

Ronald Mawby

*Feeling our Feelings: What Philosophers Think and People Know* is Eva Brann’s latest large and wonderful reflective inquiry into what it means to be human. Previously she has written on imagination (*The World of the Imagination*, 1991), time (*What, Then, Is Time?* 1999), and negation (*The Ways of Naysaying*, 2001) as “three closely entwined capabilities of our inwardness” (2001, xi). Now she takes up our affective life: “that subtly reactive receptivity we call feeling, the psychic stir seeking expression we call emotion, and the not always unwelcome suffering we call passion” (2001, xi) as well as those pervasive unfocused feelings-without-objects called moods, each “as seen through the writings of those who seem to me to have thought most deeply and largely about it” (2008, 441).

Her inquiry aims at thinking about our feelings. The second part of her subtitle—what people know—insists that we have in our own experience the data that thinking about feelings must address. Anyone who has been angry, for instance, in one sense knows what the feeling of anger is. Yet merely having felt the feeling does not enable one to grasp its nature, sources, psychic situation, and human significance. To grasp the full meaning of the feelings we need thinking, and Ms. Brann believes that those who have thought best about them are the philosophers. Hence she proposes “by way of picked philosophers” to hit the “high points that will best help me to make sense of myself—and of the world, natural

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Eva T. H. Brann. *Feeling Our Feelings: What Philosophers Think and People Know*. Paul Dry Books, 2008. Ronald Mawby teaches in the Honors Program at Kentucky State University.

and human-made, then and now, passing and perennial, the world that impinges on me by instilling or eliciting feelings in me” (xxi).

This book is singular. I would say it is *sui generis* were it not of a kind with her previous trilogy of the human center (1991, 1999, 2001). The reader naturally wants to classify the book under the identifiable rubric of some collective scholarly enterprise, but it resists. Ms. Brann explicitly warns us of ten scholarly categories into which her book fails to fit. In fact, although the book is full of learning, it is intended not “as a work of scholarship for scholars but rather as an effort at inquiry for amateurs” (xxv). Her inquiry into our affective being aims at “getting a clear view of the contrasting possibilities and developing a warm—though correctable—adherence to one of them for carrying on my life” (122), and she hopes that reading philosophy “might be useful at the least for gaining some sense of the way particular human experiences are entailed by larger frameworks and, perhaps, for finding a coherent set of livable opinions for ourselves” (401). Her standards are dual: “verisimilitude by the criteria of knowing and verifiability by the test of life” (442).

Ms. Brann, I would say, seeks significant truth, that is, a view that can stand the scrutiny and serve the purposes of both thought and life. She believes that large philosophical accounts offer her the best chance of advance toward significant truth. She knows her approach is not obviously sound:

My approach is, I think, not very hard to defend as a working method for marshaling views but not so easy to justify as a way to establish truth. For these grand wholes of philosophy are obviously even less easy to *reconcile* than the narrow partialities of scholarship, while to *cannibalize* such frameworks for handy parts to cobble together would break up the very integrity that gives their passion theories stature. Therefore the justification

for my—somewhat unfashionable—interest in grounds can hardly be, it seems to me, in culling a theory from this tradition, but rather in showing how and why the inquiry into human affect might be thought to involve all the world there is. (398)

An option that Ms. Brann has declined would look toward “psychological theories—those points of view that base their observations concerning the passions on natural theories of the soul (or the converse) and often only implicitly on metaphysics (or its denial)” (xx). She justifies her neglect of psychological science by saying that discredited psychological theories disappear at once or fade away after becoming either literary tropes or folk-psychological terms, whereas philosophical systems show a sort of eternal recurrence. Her unpersuaded scientific opposition would interpret Ms. Brann’s observation as showing that in science false coin is eventually withdrawn from circulation, whereas in philosophy bad pennies continually turn up. The scientist would add that even for discerning the phenomena scientific experiment has an advantage over philosophical reflection because experimental manipulation can separate factors that are ordinarily confounded, so the experiment may reveal things that ordinary observation may not. On the other hand the scientific literature tends to be dry: vital issues can be desiccated through operational definition, and the reader must travel many a dusty mile through descriptions of experimental setups and statistical analysis of results to find the small god of factual truth who lives in those details. The issue finally is whether such factual truths lead to a livable oasis of significant truth, or whether philosophical reflection can lead there, or whether “significant truth” names a mirage. I am a lapsed psychologist whose life witnesses my sympathy with Ms. Brann’s approach, but I add that psychological studies too can be thought-provoking.

Having sketched Ms. Brann’s aim I turn to the book itself, a handsome, well-produced volume of over 500 pages. I urge

potential readers not to be put off by the perhaps daunting prospect of so much philosophical exposition. As she says, “my subject is passion” throughout, but one topic does not imply one continuous argument. Ms. Brann presents the philosophers independently, on their own terms, and saves her own conclusions for the end, so one need not read from beginning to end to profit from the book. The ten chapters between preface and conclusion could be read separately as free-standing expository essays, serving as orientation for those who go on to the original texts, as recapitulation for those who have previously read them, or as cribs for those wishing to be spared the trouble. And the work is a delight to read. Her expositions are clear, her comments insightful and judicious. Basing my judgment on the texts I know, her accounts, even when brief, are nuanced and correct. She knows the conceptual geography so well that she is never lost. As a guide Ms. Brann is attentive to the needs of the reader and her lively lucid graciousness makes her a fun companion. The prose moves quickly without hurry, combines delicacy with penetration, shows a keen wit and generous spirit, and exemplifies Eliot’s dictum on diction: “the common word exact without vulgarity, the formal word precise but not pedantic.” The honesty of her thinking and the accuracy of her writing produce a dominant impression of sun-lit clarity.

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In the remainder of this review I wish to imitate Ms. Brann’s model by separating my exposition of the book’s contents from my personal response. I do not think Ms. Brann expects everyone who reads her book to adopt her conclusions; neither do I expect everyone to adopt mine. When, after considering various factors and divergent viewpoints, we tentatively conclude on a way to put it all together, our conclusion is neither independent of nor strictly entailed by the dialectical considerations that inform it. Truthful reporting should be disinterested, all the more so where the topic has personal significance. Therefore I first

present the contents with minimal commentary, and then discuss my response.

Ms. Brann begins considering “passion itself” through the depiction of erotic love in Greek lyric poetry. The passionate lover receives the uneasy privilege of being subjugated by an external power: “Eros whacked me.” Here the source of the passion is outside, and the soul contributes only the power to be so affected. One persistent issue in thinking about feelings is the ratio between exogenous and endogenous factors: how much is the feeling shaped by its object, and how much is the object merely a trigger that evokes a soul-formed feeling?

Plato begins the philosophy of feeling with his inquiries into eros (brought inside the soul), spirit, desire, and pleasure. We get the Platonic images of the soul from the *Symposium*, *Phaedrus*, and *Republic*, and the account of pleasure in the *Philebus*. Ms. Brann follows the latter thread to Aristotle on pleasure as a bloom on activity, to Freud on pleasure as the reduction of psychic excitation, and to modern research on desire.

Aristotle gets a chapter of his own as the founder of methodological emotion studies. Aristotle writes about the passions in his ethical and rhetorical works because of the centrality in the soul of appetite. Passions, like virtues, are seen as means between extremes. A focus of Ms. Brann here is the analysis of shame, which in the “cycles of popularity” among passions has recently been on the rise.

The Stoics come next, with special attention to Cicero. As “moderns among the ancients” they have a representational theory of mind and insist on the primacy of the theory of knowledge. Yet unlike many moderns who view a drench of the passions as a welcome relief from arid rationality, the Stoics view passions as mistakes, irrational excessive impulses that upset the soul, and philosophy as the cure.

We then make a long jump to Thomas Aquinas, who places us as rational animals in the midst of creation and situates passions between the intellectual and vegetative

powers in the center of the soul. Thomas presents a “comprehensive and differentiated synthesis” (186) of the tradition. Ms. Brann in a high tribute says that Thomas offers “the most extensive and acute phenomenology of the passions known to me” (446).

Descartes, the cunning innovator, next gives us “an initiating and deck-clearing simplification” (186). Descartes considers a human being not as a rational animal but as a minded machine, and says the passions arise in the body and are felt in the mind. Ms. Brann traces Descartes’s taxonomy of the feelings and ends her discussion of his *Passions of the Soul* with this summary judgment: “a seminal treatise that combines confident assertion with ready retraction, brisk definitiveness with unabashed equivocation, proud innovation with tacit recourse to the tradition, hopeful emphasis on experimental science with a speculative physiology, and a determined reliance on the metaphysics of distinct substances with an insistence on a human union that the theory itself forestalls. But if the theoretical exposition is surely obscure just by reason of its attempted lucidity, the practical advice might be sage just because it is wisely ambivalent” (227).

Spinoza refashions Cartesian notions into a system that aims to overcome traditional oppositions such as body/mind, impulse/freedom, desire/virtue, passion/action, emotion/reason, and feeling/thinking. Spinoza’s onto-theology implies that the impetus at the base of our being is emotional and that affect is our body’s vitality. Intellectual understanding transmutes experience from passive to active and entails an increase of joy. This chapter I found fascinating, as I have not studied Spinoza, and his metaphysics is often taken as a grounding precursor to contemporary mind-brain identity theories. I don’t know whether his “God-intoxicated” metaphysics finally works—Ms. Brann thinks not—but thinking about it is invigorating.

The Spinoza chapter contains an interlude on Adam Smith’s *Theory of Moral Sentiments*, with its “wonderfully

wise worldliness” that “operates with three moral-psychological terms, “sympathy,” “propriety,” and “the impartial spectator” (236).

Whereas Smith assumes common sense, David Hume, the topic of Ms. Brann’s next chapter, is reductively skeptical in the *Treatise of Human Nature*. As she observes, “in matters philosophical, when you deliberately deny depth you seem to have to embrace compensatory complexity” (292). Thus Hume’s view of the passions as reflective impressions becomes “baroquely elaborate” (292), yet “the analysis of pride in particular seems, complications aside, true to life” (309).

In the chapter entitled “Mood as News from Nothing: Kierkegaard, Heidegger, and the Age of Anxiety,” Ms. Brann begins with Romanticism. She comments on Rousseau, Kant, Schopenhauer, Nietzsche, and Pascal before proceeding to two thinkers who take up an “uncircumventable sense of nothingness borne by a persistent mood about nothing in particular” (342). Kierkegaard views anxiety as “the intimation of the possibility of being free—to sin” (342) and thus invests this mood with a deep theological-existential import. Heidegger says anxiety reveals “The Nothing” that is beyond beings and thus attunes us to the aboriginal. Ms. Brann, who dislikes Heidegger’s character for its lack of probity, nonetheless avers “Heidegger has told us an unforgettable truth in “What is Metaphysics?”: Moods are human affects that tell not only how we are but what *our world* is” (356).

Unlike these existential-ontological theories, Freud’s account of anxiety uses “developmental, mechanistic, quantitative, that is, basically naturalistic terms” (368). Ms. Brann contrasts ancient passion with modern moodiness, and notes that moderns tend to see good moods as superficial and bad moods as revealing, so anxiety, depression, *ressentiment*, disgust, boredom, and their kin prevail in 20th century thinkers and writers.

We come at last to the dispersal of theorizing in our times. Ms. Brann presents the very different philosophical accounts of Sartre and Ryle, the empirically-based conceptualization of Silvan Tomkins, and the currently dominate English-language school of cognitivism. Cognitivism includes a cluster of theories that generally view emotions as judgment-like evaluations that can motivate behavior. Modern theoreticians emphasize the utility of emotions for the organism, a role I think is made the more urgent since, unlike older theories in which responsive and responsible reason can discern and judge ends, many current theories admit only a shrunken, neutered, calculative rationality.

In the final chapter Ms. Brann begins with a disquisition on philosophical accounts as responses to the open receptivity of questions and as frameworks that set definite problems by pre-determining constraints on solutions. She then articulates the leading questions of the philosophical accounts she has examined in the preceding chapters. She concludes with her tentative answers to the questions that motivated her project: Is feeling a legitimate object of thinking? What is human affect? How are thought and feeling related? Are emotions judgments? Are we fundamentally affective or rational beings? Are the passions revelatory? What distinguishes aesthetic feeling? Are the emotions good?

This fragmentary statement of content fails to convey the book's richness. It is full of insights, with many sagacious and thought-provoking incidental remarks. It is striking how often Ms. Brann can summarily depict philosophical accounts of the soul with diagrams—images of the topography of our inwardness.

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Now then, what response did the book elicit from me? Ms. Brann says that to make sense of ourselves we should read the philosophers, and that made me wonder, for in my experience the benefit of reading philosophy for finding livable opinions depends on which philosophers I read, our

shared basis in what I call common sense, and the dependence of their insights on their systems. Let me explain with examples.

Plato and Aristotle—the former through images and arguments, the latter through analytic articulations—organize, refine, and supplement common sense, so when I read them I feel that we share a common world. They see what I see, and a lot more, so I benefit. As a 'seventh-letter' Platonist I don't look to the dialogues for a systematic philosophy that can settle every question it raises, and I don't find one. Aristotle used to annoy me when I felt he truncated a discussion saying "enough about that"; I would rebel, wanting—I now see—a systematic completion that is askew to his enterprise; he is usually not imposing a theory but trying to articulate what is there, and when he has said all he has seen, he stops. I profit enormously from reading these authors, though, of course, for both, if we push every question to the end we come upon mysteries.

In contrast, philosophers such as Descartes and Hume seem to be constructing systems intended as alternatives to common sense. They say, in effect, that what is really there is less or other than common sense imagines, so when reading them I feel I am in their systems rather than in the world, and if their systems are incoherent, as I believe they are, then I am nowhere, and the insights I do gain from them are in spite of, rather than because of, their systemic notions. Take Descartes. Ms. Brann agrees that we can see clearly and distinctly that Cartesian matter and Cartesian mind cannot interact, yet according to Descartes, they do. And Hume's systemic notions don't illuminate my experience but render it inconceivable; his conclusions seem to me an unacknowledged *reductio* on his premises. These authors, rather than ending in mystery, begin there.

So I wonder, What is the value of an incoherent system for illuminating the passions? How can we make sense of ourselves using notions that don't make sense? Ms. Brann writes, referring to Spinoza's *Ethics*,

What is the good of attending to a text so beset with perplexities? Well, to begin with, I cannot think of a work that is not so beset when pressed. At any rate, don't we study philosophical writings largely to learn what price is to be paid for certain valuable acquisitions, and don't we think out things on our own largely to find out what problems follow from what solutions and what questionable antecedents we can tolerate for the sake of their livable consequences? (278)

Our choice, then, is not between some perplexity and no perplexity, but between various configurations of perplexity. To avoid perplexity is to abandon thinking, or at least to give up that serious amateur personal thoughtfulness that since Socrates has been called philosophy.

Philosophy as amateur (i.e., loving, hence feeling) thoughtfulness is related to Ms. Brann's distinction between problem-solving and question-answering, which I would describe as follows. Problem-solving aims at reduction of uncertainty; when a problem is solved, our sense of the world becomes more determinate. A solved problem moves out of our center of attention; as the solution becomes a determinate thread woven into the fabric of belief or projected as a settled line of action, attention is freed for new tasks. The question-answering thought of reflective inquiry aims at heightened awareness. A question is the soul's attentive receptivity focused and formulated. When an answer is glimpsed, our experience brightens. The question does not go away when an answer is disclosed; rather the answering world is formed and focused in our soul more intensely.

Philosophies in Ms. Brann's scheme sit between questions and problems, and face both ways. Philosophies can set the terms for formulating problems. In this employment philosophy is often antecedent to science, a communal enterprise devoted to the piecemeal discovery of truth. Philosophies can also assemble and organize questions. In this

employment philosophy contributes to living well, and is not a collective scholarly enterprise. It is an individual way of being more consciously alive. Friends can help each other here—in the end Ms. Brann's book is just such a friend—but we are finally alone in our sense of what is true about what is significant.

I have a final response that concerns one of Ms. Brann's conclusions. Among the "unformed urgencies" that she brought, or brought her, to this study is this question, *the* question of her project: "Are we fundamentally affective or rational beings?" (461). Spinoza affirms the former, Aristotle the latter, and Ms. Brann sides with Spinoza but quite properly plays on an ambiguity in "fundamental" to have it both ways: "while we are at *bottom* affective, we are at our *height* thought-ful" (362). She concludes that our inwardness is affectivity variously aroused (453). Thus my being, not the impersonal intellectual "I" that Kant says accompanies every representation, but me, my very own inner ultimate self, my subject, is passion.

But the question, Are we thinking or feeling beings? is inadequately posed, since it excludes other alternatives. Maybe what is primary for us is neither feeling nor thinking, but doing and making. Maybe as human animals we act and produce to remain in being and thinking and feeling arise out of our living agency. Deeds worth doing and artifacts worth making surely have been praised in our tradition. That Ms. Brann writes books is at least consistent with the primacy of works and deeds. For she agrees with Thomas that baths are restorative, and she has tenure. Why not soak in a luxurious bath, feelings one's feelings, thinking thoughts, and when one has a "eureka" insight rest content with a self-satisfied smile? Why leap out and write a book? Might it not be because the "production of a perfect artifact" (443) is another fundamental way of being human? Now she could reply, rightly, that clarity of thought requires verbal expression, so writing is a means to thinking. And certain feelings, such as pride, require genuine achievements about which to be proud. Thus

good works and deeds may be instrumental to the best thought and feeling. Granted. But the best works and deeds also require, as instruments, good thought and feeling. Which is primary, which derivative, is not clear to me, so I cannot approve of excluding a possible answer through the posing of the question.

While this is a weighty issue when considering what it means to be human, in terms of this book it is a minor quibble. Ms. Brann undertook this project to better understand herself as a feeling being, and offers the book as an aid for any reader also “hoping to come near to an answer to the question: What does it mean to feel?” (234) The final test for each reader, then, is whether after having read it one better understands one’s affective being. For myself the answer is, Yes, I do. My vision is larger and my discernment is keener. I am still not sure in what sense the inquiry into human affect reaches all the world there is, but it surely reaches the depths of the soul and, as Aristotle observed, the soul is in a way all things. This book energized my thinking mind and enlivened my feeling soul, and engaging with it has been a pleasure. Ms. Brann is again to be congratulated for a marvelous achievement.

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