

the activating principle that gives energy and life to nature. But to understand God as immersed in nature, manifesting himself in fixed natural laws, makes it difficult to conceive of that God as a personal being with whom humanity can enter into relationship. Coleridge insisted all his life that pantheism is atheism and complained about his friend's illogical mixture of pantheist metaphysics and Anglican loyalties. Wordsworth's appeal in the 1870s, however, was just this apparently successful blending of pantheism and orthodox Christianity. Those who looked to Wordsworth as the prophet of scientific pantheism appealed to the natural religion espoused in the early poetry while taking comfort in the knowledge that Wordsworth completed his spiritual journey as a Christian poet and pillar of the Established Church. That the great poet-philosopher of the nineteenth century, the favorite poet of Unitarians and Tractarians and all religious readers in between, had been able to find and worship the divinity in nature and identify that divinity as the God of Abraham and the father of Jesus Christ made him an inspiring mentor for scientists and theologians who in the 1870s needed to believe in just such a God.

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## Dissent and Ontological Space in Romantic Science and Literature

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Thomas S. Kuhn claims in *The Structure of Scientific Revolutions*—a claim that up until now has stood virtually without comment—that in structure, dissemination, and reception, scientific discourse most resembles theological. According to Kuhn, the authoritativeness of scientific discourse "distinguishes it from every other creative pursuit except perhaps theology" (*Structure* 136). Scientific education, he later observes, is "narrow and rigid. . . probably more so than any other except perhaps in orthodox theology" (166). Scientific progress, such as it is, has theological analogues: "The theologian who articulates dogma or the philosopher who refines the Kantian imperatives contributes to progress, if only to that of the group that shares his premises" (162).

This resemblance between scientific and theological discourse applies to paradigm shifts: "The transfer of allegiance from paradigm to paradigm," Kuhn notes, "is a conversion experience that cannot be forced" (151). Such a transfer is, ultimately, an act of faith—at least during the time before the new one has been accepted by the scientific community. "The man who embraces a new paradigm at an early stage must often do so in defiance of the evidence provided by problem-solving. He must, that is, have faith that the new paradigm will succeed with the many large problems that confront it, knowing only that the older paradigm has

failed with a few. A decision of that kind can only be made on faith" (158).

The resemblance between the two discourses, according to Kuhn, begins in a literal cloistering or otherworldliness, "the unparalleled isolation of mature scientific communities from the demands of the laity and of everyday life" (164). Acculturated to and educated in isolation approaching the catechetical, the "science they encounter is a compendium of received truths, utterly lacking the disputatious contexts in which those truths were formulated. The result is a persistent tendency to make science look linear or cumulative, a tendency that even affects scientists looking back at their own research" (139). Scientists-in-training learn this "linear or cumulative" history without the history of their discourse or the disputes informing it: "Until the very last stages of the education of a scientist, textbooks are systematically substituted for the creative scientific literature that made them possible. Given the confidence in their paradigms, which makes this educational technique possible, few scientists would wish to change it. Why, after all, should a student of physics, for example, read the works of Newton, Faraday, Einstein, or Schrödinger, when everything they need to know about these works is recapitulated in a far

brief, more precise, and more systematic form in a number of up-to-date textbooks? (165)

A paradigm shift occurs in a conversion experience, a new way of seeing. Scales fall from a scientist's eyes no less readily than from an apostle's, and "what were ducks in the scientist's world before the revolution are rabbits afterwards" (111). Such an event is caused by grace rather than will. It "is a conversion experience that cannot be forced" (151).<sup>1</sup> But what role does the perceiving subject play in such a transformation of how one sees? Kuhn has difficulty owning his own commitments in answering this question:

But is sensory experience fixed and neutral? Are theories simply man-made interpretations of given data. The epistemological viewpoint that has most often guided Western philosophy for three centuries dictates an immediate and unequivocal, Yes! In the absence of a developed alternative, I find it impossible to relinquish entirely that viewpoint. Yet it no longer functions effectively, and the attempts to make it do so through the introduction of a neutral language of observations now seem to me hopeless (126).

On the one hand, Kuhn realizes that he is trapped in the Quine-Duhem subject position,<sup>2</sup> and his discomfort at this realization is palpable. But on the other hand, Kuhn understands on some level that he is present at what Richard Rorty terms "the demise of foundational epistemology." In the aftermath, Rorty proposes hermeneutics as a successor-discourse, but one with conditions. Hermeneutics is not intended to be "an activity which fills the cultural vacancy once filled by epistemologically centered philosophy." Hermeneutics, as Rorty understands it, "is not the name for a discipline, nor for a method of achieving the sort of results which epistemology failed to achieve, nor for a program of research. On the contrary, hermeneutics is the expression of hope that the cultural space left by the demise of epistemology will not be filled—that our culture should become one in which the demand for constraint and confrontation is no longer felt" (315).

Ontological space: Rorty's "cultural space" is what I call *ontological space*, where the subject engages in a hermeneutics that "is not another way of knowing—'understanding' as opposed to (predictive) 'explanation.'" It is better seen as another way of coping. It would make for philosophical clarity if we just gave the notion of 'cognition' to predictive science, and stopped worrying about 'alternative cognitive methods' (356).<sup>3</sup> "Coping" is an activity that shifts the emphasis from the quiddity of the object and the means of coming to know it, to the qualities comprising the subject. Such an activity is, accordingly, ontological rather than epistemological in its focus.

In some sense, we have always occupied ontological space, even when acting in the name of science. Scientific

models, as Kuhn notes, "provide the group [i.e., a given scientific community] with preferred analogies or, when deeply held, with an ontology" (*Tension* 297-98). Because at one extreme they are credited with instrumentality, heuristic validity, or some combination of these, such models are often accepted without comment. But, as Kuhn observes, models at the other extreme—for example, the model that ascribes all sensible phenomena to "the motion and interaction of qualitatively neutral atoms in the void"—are, as Kuhn terms them, "the objects of metaphysical commitment" (298). In occupying the "cultural space" that is also ontological space, Rorty places Kuhn on the Romantic side of "the Romantic-classic opposition" (344), by temperament and in his terminological choices. Just as the Romantic-classic opposition, can be historicized as a scientific as well as a literary style, ontological space can be historicized as well.

In the first third of the 18th century in Western Europe, books as Christian Freiherr von Wolff's *Philosophia Prima* (1730) and Isaac Watts's *Philosophical Essays on Various Subjects* (1733),<sup>4</sup> heralded a strong interest in ontology. Within their explicitly Christian context, the manifest reason their interest in ontology was to understand and to defend the doctrine of resurrection, especially in view of the appropriation by science of the Cartesian *cogito*—what Fernando Vidal terms "Descartes's fiction of a bodiless self" (937):<sup>5</sup> "Christianity . . . rejects the possibility of a person existing otherwise than as a composite of body and soul" (937-38).

If the cogitating, speaking self does not depend for its existence on being part of a composite whole that includes the body, then the body—and all semiotic representations or projections of the body—become brute matter, utterly bereft of any immanent potential. Descartes's distinction between human beings and the dumb animals he calls *automata* depends on his assumption of Vidal's "fiction." Newton's corpuscles, or "little bodies," their five properties of hardness, impenetrability, mobility, elasticity, and inertia in fact transpositions of the five senses, similarly depend on his assumption of the "fiction." Galileo, whose hypothetico-deductive style of science depended on leveraging that "fiction" to conduct thought experiments (Kuhn, *Tension* 248), was prosecuted for heresy, as Pietro Redondi has shown, primarily for advancing an atomistic model of matter at odds with the doctrine of the Eucharist (203-44).<sup>6</sup>

But how is one to account for that range of phenomena, including life itself, that are not reducible to the categories of corpuscular matter, motion, and force acting and observed at a distance? The Newtonian model works well enough for celestial mechanics. Validated by experiment and observation, it qualifies as "a theory of physics" rather than "a philosophy" (2), to use the distinction invoked by Nobel Laureate Sheldon Glashow in a recent critique of string theory. But something else entirely occurs when a Newtonian like David Hartley undertakes "to explain, establish, and apply the Doctrines of *Vibrations* and *Association*."

The First of these Doctrines is taken from the Hints concerning the Performance of Sensation and Motion, which Sir Isaac Newton has given at the End of his *Principia*, and in the Questions annexed to his *Optics*; the Last, from what Mr. Locke, and other ingenious Persons since his Time, have delivered concerning the Influence of *Association* over our Opinions and Affections, and its Use in explaining those Things in an accurate and precise way, which are commonly referred to the Power of Habit and Custom, in a general and indeterminate one.” (1, 5-6) Explaining sensation as vibrating particles in the nerves, as Hartley did, seemed plausible. But a half-century later, after the Galvani-Volta controversy established that nerves conveyed electronic impulses, Hartley’s theory appeared to be a rogue trope, one that survives whenever paradigm shift is confused with paradigm drift by those who borrow Kuhn’s ideas. In the clockwork universe of the eighteenth and early nineteenth centuries such drift was common.

Dissent is a religious position, and dissenting sects in 18th century London, as E. P. Thompson has documented, were too numerous and diverse to generalize into a single religious group. On the whole, however, they found the clockwork Newtonian universe a partial or even inaccurate explanation of the world, largely because it was devoid of immanence—or at least because immanence had been, as Newton described it, marginalized to the status of “a certain most subtle spirit which pervades and lies hid in all gross bodies. . . .” (*Principia* 547). As a result of this marginalization, some dissenters focused on and foregrounded the notion of immanent causation.

John Wesley, a man of science and a dissenter, “a revolutionary in medicine just as he was in the church” (Fulford 16), epitomizes the response to the Newtonian clockwork universe. While thoroughly conversant with the contemporary view of electricity as an ether with fluid-like properties,<sup>7</sup> Wesley understood its efficacy as working primarily inwardly. In his words, “From Dr. Franklin’s *Letters* I learned (1) that electric fire (ether) is a species of fire, is finer than any yet known [sic]; (2) that it is diffused, and in nearly equal proportions, through almost all substances; (3) that, as long as it is thus diffused, it has no discernible effect; (4) that if any quantity of it be collected together, whether by art or nature, it then becomes visible in the form of fire, and inexpressibly powerful; (5) that it is essentially different from the light of the sun, for it pervades a thousand bodies which light cannot penetrate. . . .” (qtd. In Collier 33).

Ultimately, electricity is for Wesley a divine causative force, “subtle and active enough, not only to be, under the Great Cause, the secondary Cause of Motion, but to produce and sustain Life thro’out all Nature, as well in Animals as in Vegetables” (*Desideratum* 3). Wesley’s synopses of cases he treated attest to electricity’s inward-working efficacy. For example, “Anne Heathcot . . . was seized, in May last, with what is commonly called an ‘Ague in the Head,’ having a violent

Pain in her Head, Face, and Teeth. After trying abundance of Remedies, to no purpose, she was, in August, electrified thro’ the Head. Immediately the Pain fix’d in her Teeth. She was electrified four Times more, and has felt nothing of it since” (43). Or “William Jones, a Plaisterer . . . fell from a Scaffold on Thursday, Feb. 15 last. He was grievously bruised, both outwardly and inwardly, and lay in violent pain utterly helpless, till Saturday in the Afternoon, when he was brought (carried) by two Men to be electrified. After a few Minutes he walk’d home alone, and on Monday went to work” (46-47). According to these cases, electricity healed the internal bruising, not just the surface injuries.

If Wesley’s electricity is inward working, the God that he proposes as its cause is no less so. In a 1775 sermon entitled “On Working out Our Own Salvation,” preached fifteen years after the publication of *Desideratum*, Wesley proposes the operation of God’s grace as being similarly inward. Taking as his text Philippians 2:12-13 (“Work out your own salvation with fear and trembling; For it is God that worketh in you both to will and to do of his good pleasure”), Wesley goes back to the original Greek epistle to gloss *to will* and *to do*.

The original words, *to thelein* and *to energein*, seem to favor the latter construction: *to thelein*, which we render *to will*, plainly including every good desire, whether relating to our tempers, words, or actions; to inward or outward holiness. And *to energein*, which we render *to do*, manifestly implies all that power from on high, all that energy which works in us every right disposition, and then furnishes us for every good word and work. (4)

*To thelein* originates with the individual who sincerely desires to master desire and to live a life characterized by holiness. But fallen human beings are, by definition, fallible, and without *to energein*, the divinely originated but indwelling power of God’s grace, there is nothing to guide and to validate *to thelein*.

*To energein*—to work inwardly: in a scientific culture that has marginalized interiority and immanence, in large measure because, as Newton states, such conditions do not lend themselves to observation and experiment, it is at best awkward, at worst out-and-out anathema, to discuss energy, the physical entity that takes its name from the Greek verb. In fact, as I argued almost two decades ago in “The Re-emergence of Energy in the Discourse of Literature and Science,” the rise of Newtonian physics not only silenced any discussion of energy in physical circles, but caused the word’s virtual disappearance from the English word-board for a century or more.

Wesley’s is but a Pisgah-vision of what the Quaker Thomas Young grasped and proposed some thirty-two years after Wesley preached his sermon, when, in his two-volume *Course of Lectures on Natural Philosophy and the Mechanical Arts* (1807), he suggested that what Newtonian physics had here-

tofore denominated *vis viva* be denominated *energy*. "The same idea [i.e., 'living or ascending force,' *vis viva*] is somewhat more concisely expressed by the term *energy*, which indicates the tendency of a body to ascend or to penetrate a certain distance in opposition to a retarding force" (1, 44).<sup>8</sup> Subsequent research into the nature of energy gave rise to the distinction between kinetic energy (formerly *vis viva*), the concept discussed by Young above, and potential energy (formerly *vis mortua*), but it should be noted that this conversation began with Young.

Both kinetic and potential energy may be said to be indwelling in the body. Force—especially "retarding force"—exists outside the body. The physical concepts seem clear enough, but what do they have to do with dissent and immanent causation? Quakerism, no less than Methodism, sets forth a view of humanity's relationship to God in which God makes his presence known inwardly, to the spirit. Isaac Penington (1616-79), one of the founding figures of Quakerism, writing in "A Few Words Concerning the Worship Which Our God Hath Taught Us" (n.d.), characterizes Quaker worship as the occasion of opening oneself to God's immanent presence.

OUR worship is a deep exercise of our spirits before the Lord, which doth not consist in an exercising the natural part or natural mind, either to hear or speak words, or in praying according to what we, of ourselves, can apprehend or comprehend concerning our needs; but we wait, in silence of the fleshly part, to hear with the new ear, what God shall please to speak inwardly in our own hearts; or outwardly through others, who speak with the new tongue, which he unlooseth, and teacheth to speak; and we pray in the Spirit, and with the new understanding, as God pleaseth to quicken, draw forth, and open our hearts towards himself. (4, 261)

God's immanent presence is figured by Penington elsewhere as vital, radiant energy. In "Concerning the Sum or Substance of Our Religion Who Are Called Quakers and the Exercises and Travails of our Spirits therein" (n.d.), Penington describes an awareness of divine presence within as an experience compounded of emancipation and resurrection. "Now when the light of God's holy Spirit breaketh in upon man, and his quickening virtue is felt; then life enters into that which was slain, and there is a desire begotten in the heart to travel out of the Egyptian state, into the good land; that the soul, which came from God, might return back again to him, out of the sinful, wandering, miserable, lost estate, and might live and walk with him, in the purity, virtue, and power of his own life and spirit" (2, 441).

According to David Knight, by reason of its humble condition and its great distance from the diocesan seat at Exeter, the inhabitants of Penzance, Cornwall, where Humphry Davy was born and grew up, were well disposed to consider converting to Methodism. "John Wesley and later Methodists had been . . . very successful in evangelizing in Cornwall."

Although "the Davy family's connections seem to have been with Church rather than Chapel . . . Humphry was never later a strongly committed member of any particular congregation" (*Humphry Davy* 14).

Despite what appeared to have been an indifference to the claims of organized religion, Davy was not irreligious, and his religious leanings, as expressed in his poetry, are revealing. In "Written after Recovering from a Serious Illness" (1808)—apparently, the typhus he contracted on a visit to the Newgate jail to give an expert opinion on the adequacy of that jail's ventilation—Davy figures the human mind as resulting from the application of celestial electricity.

A sacred spark created by his breath,  
The immortal mind of man His image bears;  
A spirit living 'midst the forms of death,  
Oppress'd but not subdued by mortal cares! (17-20)

The "mortal cares" in question affect this life, but this life is only one part of the circuit that is divinely instantiated human existence. After death, the individual is reunited with the power source of the "sacred spark."

Then, as awakening from a dream of pain,  
With joy its mortal feelings to resign;  
Yet all its living essence to retain,  
The undying energy [!] of strength divine! (65-68)

Given the metaphysics readily evident in this poem, it should come as no surprise that Davy was an early advocate of "the use of electricity in chemical analysis. . ." (Knight 63). In his Bakerian Lecture for 1807, Davy, while making a point of not entering into metaphysical speculations concerning "the remote cause of . . . electrical energy," justifies that use.

Amongst the substances that combine chemically, all those, the electrical energies [!] of which are well known, exhibit opposite states . . . supposing perfect freedom of motion in their particles or elementary matter, they ought, according to the principles laid down, to attract each other in consequence of their electrical powers. In the present state of our knowledge, it would be useless to attempt to speculate on the remote cause of that electrical energy, or to reason why different bodies, after being brought into contact, should be found sufficiently electrified; its relation to chemical affinity is, however, sufficiently evident. May it not be identical with it, and an essential property of matter? (12)

On the face of it, there is no question that the first-generation Romantics were, at least in their earlier years, dissenters. Blake, likely the child of a Methodist shopkeeper, was never known to shrink from religious controversy, his antagonists ranging from Jacob Swedenborg to Bishop Watson. And the character of Thel in *The Book of Thel* (1789), an early avatar of what Blake later terms "the female will," may owe

something to a distinction such as the one made by Wesley between *to thelein* and *to energin*.

Whether or not he practiced the “natural Methodism” identified by Richard E. Brantley, the young Wordsworth made a point of avoiding religious commitment, choosing not to take holy orders at Cambridge and proposing a neoplatonic version of the afterlife in the Intimations Ode (1802; 1804). Only with “Elegiac Stanzas” (1805) does the speaker proclaim, “I have submitted to a new control” (34). The young Coleridge was for a time a Unitarian minister, although he, like Wordsworth, embraced religious orthodoxy in mid-life. In addition, in 1799 the young Wordsworth and Coleridge became fast friends with Davy, then employed by Thomas Lovell Beddoes at the Pneumatic Institution (Knight 31-41).

And in this instance, where there is dissent, there is immanentist thought as well. Blake’s notebook poem “Mock on Mock on Voltaire Rousseau” takes as its subject not French thought or the Enlightenment more generally, but the notion that the ground of the world—and by extension, human existence in that world—is corpuscular or atomistic matter. The poem—hymn, actually, as it is written in the ABAB tetrameter usually associated with English hymnody—suggests that underlying matter there is a radiant source, figured as “the beams divine” (6) with the power to transform an opaque grain of sand into a radiant “Gem” (5) for the observer who can overcome or avoid succumbing to “the mocking Eye” (7) of the Enlightenment scientist or philosopher. Seen in its proper eschatological context, corpuscular or atomistic matter constitutes a boundary or completion of sorts, the origin of which is a bond or covenant between God and humanity, as the result of which God manifests immanently in this material world like radiant light in a tent.

The Atoms of Democritus  
And Newtons Particles of light  
Are sands upon the Red sea shore  
Where Israels tents do shine so bright. (9-12)

The immanence that Blake champions is pervasive and recapitulative. In *Milton* (1804), the interval of human time demarcated by “a pulsation of the artery” both contains and recapitulates Bishop Ussher’s 6000-year eschatological history of the world.

Every Time Less than a pulsation of the artery  
Is equal in its period & value to Six Thousand Years.  
For in this Period the Poets Work is Done: and all the Great  
Events of Time start forth & are conciev’d in such a Period  
Within a Moment: a Pulsation of the Artery. (pl 28: 61-pl.  
29: 3)

And what is true of time is true of space as well. Using the overtly human measure of “a red Globule of Mans blood” rather than the displaced human measure of the corpuscle,

Los proclaims, “And every Space smaller than a red Globule of Mans blood. opens / Into Eternity of which this vegetable Earth is but a shadow” (pl. 29: 21-22).

Wordsworth, whom I cannot discuss in detail, owing to length limits, is at once fascinated by the notion of immanent causation and keenly aware of how difficult it is to discuss its operation. One need only consider the evocation in, “Tintern Abbey,” of the reverie in which “we are laid asleep / In body, and become a living soul” (45-46), an evocation followed almost immediately by the prolepsis, “If this / be but a vain belief. . .” (49-50), to glimpse Wordsworth’s double-bind.

Coleridge also senses a double-bind: he is at once fascinated by the notion of immanent causation and yet morbidly aware that learning how such causation operates may involve not only “see[ing] into the life of things” but also seeing into the death of things. Knowledge of how immanent causation operates may entail knowledge of good and evil, in other words. And that is precisely the knowledge that Adam is enjoined by God from acquiring in the *J*-account of the creation (Gen. 2:16-17).

In “Effusion 35. Composed August 20th, 1795, at Clevedon, Somersetshire” (“The Eolian Harp”), Coleridge evokes the Edenic context of that injunction virtually from the start of the poem, alluding to Adam and Eve’s bower as it is described in Book 4 of *Paradise Lost* (17n.). The speaker’s attention turns to the wind-harp, from which “the long sequacious notes / Over delicious surges sink and rise. . . (18-19). A reverie ensues, in which the speaker figures his brain as a type of wind harp.

And many idle flitting phantasies,  
Traverse my indolent and passive brain  
As wild and various, as the random gales  
That swell or flutter on this subject Lute! (32-35)

By way of illustration, the speaker speculates on the immanent causation responsible for ensoulment.

And what if all of animated nature  
Be but organic Harps diversely fram’d,  
That tremble into thought, as o’er them sweeps,  
Plastic and vast, one intellectual Breeze,  
At once the Soul of each, and God of all? (36-40)

The speaker has gone too far, and he knows as much. Characterizing his speculations as the by-product of corruption and decay—“Bubbles that glitter as they rise and break / On vain Philosophy’s aye-babbling spring” (48-49)—the speaker concludes that philosophy, natural or metaphysical, is best left to other practitioners, and that awe-struck worship of “Th’ INCOMPREHENSIBLE” (51) trumps speculating on the varieties and uses of immanent causation.

If, as Rorty would have it, hermeneutics is “coping” rather than “understanding” or “(predictive) ‘explanation,’” hermeneutics qualifies the subject position in that manner by virtue of the movement away from explanation and prediction and through understanding. This movement, which began with the acknowledgement of the existence of ontological space and led to its exploration, culminated in the insight that objective knowledge is a fiction because the objective observer is a fiction. Romantic science, which fell somewhere between “coping” and “explanation,” was the middle ground of the journey to this insight, as can be seen by the following consideration of Goethe.

In his discussion of Goethe’s researches on the *Urpflanze*, Knight observes that Goethe concluded: “flowers were thus to be understood as modified leaves. The development of flowers was a kind of transcendental evolution; but this idea is not like Darwin’s, because Goethe was not seeking an explanation of how plants came to be the way they are, but an understanding” (“Romanticism and the Sciences” 16). While he wishes to do more than to cope with what it means to be in the world, Goethe has no need to explain how the plants in the world—or the world itself, for that matter—came to be as it is. The difference between explanation and understanding is one that turns on the distance between subject and object, and the resulting level of intimacy. In ontological space, the potential for such intimacy is one of the best consequences of the post-epistemological way of knowing that was, in its turn, anticipated by the dissenting way of knowing.

## NOTES

<sup>1</sup>Richard Rorty views Kuhn’s descriptive terminology, if not his theory outright, as being on the Romantic side of the Romantic-classic divide. “This latent Romantic-classic opposition which lurks in the background of discussion of Kuhn is brought into the open by Kuhn’s unhappy use . . . of Romantic phrases like ‘being presented with a whole new world.’ instead of the classic ‘using a new description for the world’” (344).

<sup>2</sup>A physicist and philosopher of science, Pierre Duhem [1861-1916] adopted an instrumentalist view of science. He gave his name to the Quine-Duhem thesis, which holds that for any given set of observations there are an innumerable large number of explanations. Thus empirical evidence cannot *force* the revision of a theory. He further observed that the failure of a theory to make accurate predictions implies a failure of the theory as a whole, not of a particular part. These views were later adopted by W. V. Quine.

<sup>3</sup>Richard E. Palmer, writing in *Hermeneutics: Interpretation Theory in Schleiermacher, Dilthey, Heidegger, and Gadamer*, observes that for Heidegger, “ontology must, as phenomenology of being, become a ‘hermeneutic’ of existence” (129)

<sup>4</sup>The full title of Wolff’s text is *Philosophia prima; sive, Ontologia, methodo scientifica pertractata, qua omnis cognitionis humanae principia*

*continentur*. The full title of Watts’s text is *Philosophical essays on various subjects: viz. space, substance, body, spirit, the operations of the soul in union with the body. . . : with some remarks on Mr. Locke’s Essay on the Human understanding: to which is subjoined A brief scheme of ontology, or The science of being in general with its affections*.

The word *ontology* itself first appeared in two works published in 1613: Rudolf Göckel’s *Lexicon philosophicum*, and Jacob Lorhard’s *Theatrum philosophicum*, second edition (“Notes” 3). Other titles include Gideon Harvey’s *Archeologica Philosophica Nove, or, New Principles of Philosophy: Containing Philosophy in General, Metaphysics or Ontology, Dynamology or a Discourse of Power, Religio Philosophico or Natural Theology, Physicks or Natural Philosophy* (1663), and the anonymous *Logic, Ontology, and the Art of Poetry* (1776).

<sup>5</sup>A parallel instance is Locke, whom both Watts and Vidal discuss. John Richetti comments on Locke’s ontological detachment as follows: “This [contemplative] intelligence transcends the play of ideas and objects in the understanding by slowing the tempo, separating ideas and objects, and thereby achieving an ontological stability that is at odds with the epistemological turbulence of the Lockean universe” (90). I make the case for the importance of acknowledging a self-aware ontological situatedness in the introduction to my *William Blake in a Newtonian World* (3-18).

<sup>6</sup>Rorty’s discussion of Kuhn’s understanding of the Galileo-Bellarmino controversy is instructive. Quoting Giorgio de Santillana’s *The Crime of Galileo*, Rorty asks,

But can we then find a way for saying that the considerations advanced against the Copernican theory by Cardinal Bellarmine—the scriptural descriptions of the fabric of the heavens—were “illogical or unscientific?” This, perhaps, is the point at which the battle lines between Kuhn and his critics can be drawn most sharply. Much of the seventeenth century’s notion of what it was to be a “philosopher,” and much of the Enlightenment’s notion of what it was to be “rational,” turns on Galileo’s being absolutely right and the church absolutely wrong. To suggest that there is room for rational disagreement here—not simply for a black-and-white struggle between reason and superstition—is to endanger the very notion of “philosophy. For it endangers the notion of finding “a method for finding truth” which takes Galilean and Newtonian mechanics as paradigmatic. A whole complex of mutually reinforcing ideas—philosophy as a methodological discipline distinct from the sciences, epistemology as the provision of communication, rationality as possible only on the common ground which makes possible commensuration—seems endangered if the question about Bellarmine is answered in the negative. (328)

<sup>7</sup>Joseph Priestley, commenting in his own *The History of Electricity* (1767) on the classic kite experiment reported by Benjamin Franklin in his *Experiments and Observations on Electricity* (1751), observes that when the kite string was wet, the electricity “would stream out plentifully from the key, at the approach of a person’s finger” (179; my emphasis).

<sup>8</sup>Young's biographer, Alexander Wood, states that Young's text demonstrates "that he has clearly grasped the importance of what we now call the kinetic energy of a moving body, and he is the first to apply the term *energy* in this connection" (129). For an elaboration of the social context of Young's ideas, see, Ted Underwood, "Productivism and the Vogue for 'Energy' in Late Eighteenth-Century Britain."

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