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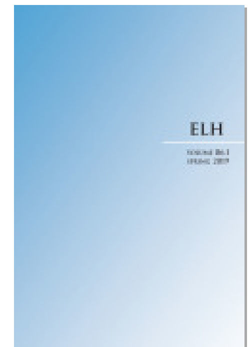

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NEWTON'S ARIAN EPISTEMOLOGY AND THE COSMOGONY OF *PARADISE LOST*

BY JOHN ROGERS

Heretics both, John Milton and Isaac Newton were, as most scholars now agree, Arians. In reasoned opinions that during their lifetimes they voiced safely outside the public space of the printed theological treatise, both Milton and Newton asserted a version of the fourth-century theology of Arius and his followers, who argued for the autonomy and individualism of the Son of God, whom they took to be the first of God's creatures. Known as Christianity's "archetypal heresy," Arianism had provoked the early church to consolidate its thinking about the godhead, and the orthodox theology that eventually emerged in opposition to Arianism would deny the Son's independence, and require belief that the Father, Son, and Holy Spirit were co-equal, co-eternal, and co-essential.[1] Passionate in their private confutations of this most central of Christian doctrines, the poet and the physicist both denied the existence of a Trinity that tied the Son to the Father and Holy Spirit in a shared essence. Milton and Newton argued for the singular primacy of the heavenly Father, who alone is the "most high" God, although, as we will see, both men permitted belief that the Father could appoint other divine beings, when he so chose, to assume the provisional and generic appellation "God."[2] The Son, or Christ, they insisted, like Arius before them, was created by the Father at a specific point in time before the creation of the universe. And it is this heretically imagined creature, the Arian Christ, who would play a crucial role for both Milton and Newton in supplying the means by which they could justify their unprecedented claims to understand the secrets of creation. Milton and Newton, as we will see, relied on idiosyncratic versions of the Arian belief in Christ's createdness to sanction their own efforts, as created beings, to create works as monumental, and as seemingly divinely inspired, as *Paradise Lost* and the *Principia Mathematica*.[3]

The anti-Trinitarianism engaged by the poet and his younger scientific contemporary is a feature of the intellectual lives of these two men that has pressed itself on the disciplinarily distinct fields of Milton studies and Newton studies since the nineteenth century, when

the manuscript evidence of their unmistakably heterodox religious convictions was brought to light. But while scholars in both worlds have conceded the fact of Milton's and Newton's heretical leanings, they have not pursued to any great extent the question of *why* either figure would cultivate such a passionate commitment to a system of beliefs as culturally remote as Arianism. My intentions in this essay are simple. I seek to pose the question of why either of these men would adopt an arcane theological heresy that boasted so few seventeenth- or eighteenth-century adherents. I test the hypothesis that an examination of the Arian theory of creation in *Paradise Lost* can assist us in understanding Newton's own commitment to that notorious, ancient heterodoxy. And I argue, further, that for Newton theology subtended scientific epistemology: he used the idiosyncratic Arianism associated with Milton as the private conceptual foundation for the true knowledge he knew he had acquired of the mechanics of the material universe.

I. THE KNOWLEDGE OF GOD

Our inquiry into the filiations that tie Newton to Milton must be prefaced by an acknowledgment of the profound differences that separate both their persons and their theological sensibilities. In the theological treatise he wrote in Latin during the 1650s, and in his late poems *Paradise Lost* and *Paradise Regained*, Milton was perhaps overwhelmingly concerned to articulate a version of Arminianism, the seventeenth-century Protestant movement that emerged from the conceptual struggles of the Dutch theologian Jacob Arminius with the Reformed theology of predestination tied to the Genevan theologian John Calvin and his later sixteenth- and seventeenth-century disciples. Milton was inescapably drawn to those arguments of Arminius that freed the human will from the bonds of Calvinist predestination and irresistible grace. But Milton would go beyond the faith of Arminius himself and adopt aspects of the more daring religious thought of Arminius's successors, the Remonstrants, some of whom were willing to extend that freedom to God the Father and his Son, liberating those two divine beings from what Milton appears to have considered to be the metaphysical stranglehold of the falsely imagined Trinitarian godhead.[4] For Milton, the freedom of the human will was logically tied to the freedom of the divine will: God the Father had been free to create, or not, his created Son; and the created Son, just like man, was free to obey, or not, the will of God.[5] It was this extraordinary degree of contingency structuring the interactions of Father and Son that guaranteed for Milton the radical freedom of the human will.

The theological pressures under which Newton labored were different. A biblical literalist who held strenuously to concepts such as that of God's personhood, Newton was dismayed to learn that the early readers of his magisterial study of the laws of motion, his 1687 *Principia Mathematica*, or *Mathematical Principles of Natural Philosophy*, found in his work a conceptual tie to deism, the early modern theological school emergent in the years of the very Scientific Revolution of which Newton was such an important part.[6] For deists, who denied the deity anything like a personality, or personhood, God could be imagined as an impersonal abstraction nearly indistinguishable from the universe itself.[7] But Newton, whose complex relation to deism is still a matter of scholarly disagreement, appears to have been discomfited by the seemingly deist implications of his discovery of vast, impersonal laws and processes in the universe.[8] And it was partly in response to what he took to be the enthusiastic deist response to his work as a physicist that Newton wrote a brief and remarkable theological essay that he appended to a second, 1713 edition of the *Principia*, in a supplementary section of the new edition he titled the "General Scholium." Attempting to counter any idea that the physical laws of the universe he discovered might be subtended by a novel, rationalizing theology such as deism, Newton begins the famous "Scholium" essay with the forceful claim that the creation of the universe could only be the product of intelligent design: "This most beautiful System of the Sun, Planets, and Comets, could only proceed from the counsel and dominion of an intelligent and powerful being."[9] And this intelligent and powerful divine being could not be imagined, *pace* the deists, as identical to the universe: "This Being governs all things, not as the soul of the world, but as Lord over all; and on account of his dominion he is wont to be called *Lord God* . . . or *Universal Ruler*" (*M*, 2:389).

In the reflective, explanatory space of the essay on God's dominion in the 1713 *Principia*, Newton was able to launch his argument against the abstractly diffuse God of deism by pressing a unique case for God's status as a coherently conscious, sentient, and deliberative being. For Newton, the unified personhood of God, like the personhood of man, was consistently defined by the possession of three distinct capacities: the living God is in possession of "all power to perceive, to understand, and to act" (*M*, 2:391). For a theocentric physicist such as Newton, one might think, it is God's capacity to *act* that would be the most consequential of his powers: it is divine action that would have been seen to produce the creation, to maintain that creation by means of the mechanical laws of the universe, and to violate those mechanical

laws when God has chosen to intervene in the natural world by means of an extraordinary miracle. But as important as action is, or at least logically should be, for the physicist, it was, remarkably, the first two of the three capacities of personhood that dominated Newton's theological speculations in the "General Scholium." Perception, because it makes possible the work of understanding, lies at the foundation of both man and God's unique and unified personhood:

> Every soul that has perception is, though in different times and in different organs of sense and motion, still the same indivisible person. There are given successive parts in duration, coexistent parts in space, but neither the one nor the other in the person of a man, or his thinking principle; and much less can they be found in the thinking substance of God. Every man, so far as he is a thing that has perception, is one and the same man during his whole life, in all and each of his organs of sense. God is the same God, always and everywhere. He is omnipresent not *virtually* only, but also *substantially*; for virtue cannot subsist without substance. (*M*, 2:390)

Substantial perception and substantial understanding are the defining attributes of both the human and the divine person. And as we will see, the phenomena of divine perception and divine understanding lie at the heart of Newton's struggle, over what appears to be many years, to fashion a theology capable of underwriting his unavowed vocation as an original, indeed revolutionary, inquirer into the laws of God's creation.

In the passage cited above, Newton posits perception and understanding as the basis for any analogy or homology between God and man. But with a maddening refusal to acknowledge any conceptual irony or paradox, Newton will quickly move on in the same paragraph to discuss the way in which the radical difference between divine and human modes of perception and understanding bespeak a fundamental ontological distinction between God and man, a distinction so great that any human attempt to acquire knowledge of God is virtually impossible. Both man and God, for Newton, are committed to knowing. But God's knowledge of his creation differs so vastly from ours not simply because of his palpable, corporeal omnipresence, but because of the radically distinct way in which his mode of perception has been framed within his "substantial," omnipresent being:

> 'Tis allowed by all that the supreme God exists necessarily; and by the same necessity he exists *always* and *every where*. Whence also he is

> all similar, all eye, all ear, all brain, all arm, all power to perceive, to understand, and to act; but in a manner not at all human, in a manner not at all corporeal, in a manner utterly unknown to us. (*M*, 2:391)

Man shares with God the capacity to perceive, understand, and act. But while *our* corporeal frames are constituted of highly differentiated organs of perception, understanding, and action, God's being is not compounded, or composed of parts, at all. God's being, rather, is homogeneous, or "similar": "he is all similar, all eye [totus visus], all ear [totus auditus], all brain, all arm, all power to perceive, to understand, and to act" (*M*, 2:391). God's uncompounded being is superior to our own, as our highly differentiated human bodies are marked by distinct and separate organs of perception (exemplified by eye and ear) and understanding (as represented by the brain), and of distinct limbs of action (embodied in the arm). The homogeneity of God's perceptive, understanding, and active substance, diffused throughout the plenum of the material creation that is constituted, it would seem, by his very body, means that God sees and understands and acts, as Newton says in the same passage in the "General Scholium" essay, "in a manner not at all human, in a manner not at all corporeal, in a manner utterly unknown to us."

Surely this passage about the unimaginably diffuse divine being Newton insists is a personal God is one of early modern England's most imaginatively exuberant representations of the deity. "All eye, all ear, all brain, all arm," Newton's God both is and is not like the human person. In possession of faculties of perception and will, such as sight, hearing, thought, and action, which are unquestionably like ours, Newton's living God is empowered to exercise a deliberate, voluntary, and conscious power over his creation that is distinctly human in its operative assumptions. But because those faculties are configured in the divine being in so radically different a manner than in the human being, God's creation of and governance over the natural world is at the same time radically *not* human. How, then, Newton puzzles, are we as humans to know something of God's substance and governance? We can know in part, Newton seems to imply in conclusion, because of our access to the scriptural language describing God: "[B]y way of allegory, God is said to see, to speak, to laugh, to love, to hate, to desire, to give, to receive, to rejoice, to be angry, to fight, to frame, to work, to build" (*M*, 2:391). And these actions allegorically attributed to God both can and cannot be understood by virtue of our knowledge of the human: "For all our notions of God are taken from the ways of mankind,

by a certain similitude which, though not perfect, has some likeness, however" (*M*, 2:391). The imperfect similitude between man and God makes impossible, but also in another sense possible, our knowledge of God and his creation. To settle the problem of how it is we can understand the secrets of creation, Newton conjoins the discourses of theology and science to focus on the even thornier problem of how it is we can understand God. But the result is hardly the explanatory clarification that the term "Scholium" implies.

II. "ALL EYE, ALL EAR" AND THE PERSONHOOD OF GOD

We can begin our inquiry into the logic of Newton's treatment of the problem of our knowledge of God and of his creation by tracing the literary history of the image of a divine being who is "all eye, all ear." Certainly one of Newton's primary sources for the image of God as universally diffused perception, understanding, and action is the early church father Irenaeus, whose account of the early church in his *Adversus Haereses*, or *Against Heresies*, served as the basis for a history of early Christianity that Newton was himself preparing to write. Many draft versions of Newton's own history of the early church have survived, and the archive reveals that he took a particular interest in Irenaeus's account of the wrong-headed Gnostic theologian Ptolemy, whose understanding of the divine being was founded on an elaborate allegorization of God's distinct functions and "affections."[10] As Newton explains in his paraphrases and translations of Irenaeus, the Gnostics subdivided the deity into the discrete, individual components of perception, understanding, and will: they "assigned to the supreme father two wives *Ennœa* & *Thelesis*, Vnderstanding & Will & called them the affections of the unknown father & said that the Vnderstanding was the older wife because the understanding precedes the will" ("D," 15.6, 109[v]). Invoking Homer's vulgar personification of the gods, Irenaeus, in Newton's translation, mocked the metaphysical (and domestic) drama the Gnostics imagined was continually unfolding within the godhead:

> They err therefore in ascribing to God the affections & passions of men & making him a compound. For God is not as man, nor are his thoughts like ours. He is simple & not compound. He is all like & equal to himself, all sense all spirit, all perception all Ennœa, all *λόγος* all ear, all eye, all light. He is all sense which cannot be separated from it self, nor is there any thing in him which can be emitted from any thing else. ("D," 15.6, 109[v])

The image of God Newton shares in the "General Scholium," the deity who is all eye and all ear, has its origin in the description of God with which the early church father Irenaeus attempted to refute the Gnostics. In his characterization of the abstract mechanics of Gnosticism's divine psychomachia, Irenaeus accuses the Gnostics, in their ascription to God of the affections and passions of men, of a mistaken understanding of the nature of divinity. He allows for the possibility that the faculties of perception, understanding, and will might interact within any given *man* in the highly differentiated manner described by the Gnostics. But God, Irenaeus insists, is not a "compound": he is "not as man, nor are his thoughts like ours" ("D," 15.6, 109^{v}).

Why Newton would bother to devote so much energy and attention to the early critiques of the Gnostics is not, on the surface, self-evident. But Newton saw in the Gnostics' elaborate subdivision of divinity an anticipation of the Trinitarianism that would come later to contaminate Christianity in the fourth century. Like the orthodox partitioning of the one God into the discrete entities of Father, Son, and Holy Spirit, the Gnostic segregation of God into the individual components of perception, understanding, and will ruled out any possibility that the deity governed the universe in the anthropomorphically conscious and deliberate manner that Irenaeus's and Newton's scriptural literalism demanded. Newton found in Irenaeus's refutation of Gnosticism an important precedent for his own, largely secret, campaign against the theological corruption occasioned by what he felt to be the dread orthodoxy of Trinitarianism.

Perhaps more important, Irenaeus also supplied Newton with an ancient voice in support of his opposition to the contemporary specter of deism. The problem of the representation of God, for both Irenaeus and Newton, was a complex one. It was in no simple sense that Irenaeus dismissed the Gnostics for their anthropomorphizing tendencies. It is the case rather that for Irenaeus the Gnostics were *improperly* anthropomorphic in their understanding of God. Although not a human person with respect to the composition of his faculties, the Irenaean and Newtonian deity was, quite unlike that of the Gnostics, a single personal being with a deliberative and unified consciousness, and in no way identifiable with the created world external to himself. Further, he may be "all eye, all ear, all light," but the Irenaean God was for Newton the personal God of his own Unitarian faith, founded on the theologically minimalist ground of the Apostles' Creed: "the Christian religion is founded in beleiving one God & one Lord &

acknowledging the incarnation & passion of this Lord, & the Gnosticks generally eluded all the articles of this faith" ("D," 15.6, 108^{r}). "Thus," writes Newton, in concluding his translation of the early church father's heresiography, "does Irenæus represent & confute the Metaphysicks of the Gnosticks" ("D," 15.6, 109^{v})

Newton turned to Irenaeus for conceptual ammunition against both the ancient but persistent error of Trinitarianism and the more contemporary error of deism, what he saw as two pernicious theological systems conspiring to corrupt the truths of Christianity. But it is important to note that Irenaeus's particular figuration of his personal, unitary God was by no means the only available representation of a divine being who is "all eye, all ear." In fact, it was just this image of the homogeneously percipient deity that had emerged in the late seventeenth and early eighteenth century as a central focal point in the period's controversies about deism. It was well known that the source for Irenaeus's image of a God whose faculties of perception and understanding are diffused throughout the material world was the ancient Eleatic philosopher Xenophanes, whose philosophical fragments would be described in detail by the early modern philosophical encyclopedists Gerardus Vossius, Ralph Cudworth, Thomas Stanley, and Pierre Bayle.[11] Like Irenaeus after him, Xenophanes countered the vulgar polytheism of Homer and Hesiod by forwarding a sophisticated monistic image of a divinity who is "all eye, all ear": "He resembles man neither in form nor understanding; being all eye, all ear, all intellect, by the power of his mind and without extraneous effort he sways and governs all things."[12] But in this original ancient formulation of the image of the homogeneously percipient God, Xenophanes did not emphasize, as Irenaeus would later, the unified consciousness of this universally dissipated God. As many in the eighteenth century argued, Xenophanes seemed to point not to the personal God of scripture, but to the deist God identical to nature. The historian Jonathan Israel has described in fact a controversy that broke out on the subject of whether Xenophanes should be seen to support, as Cudworth had suggested, a more comfortable theistic conception of God "as pure mind and hence not identical with nature," or, as Bayle would argue, a God like that of Spinoza or of the deists, who could not meaningfully be distinguished from the universe itself.[13] When Newton makes his claim in the "General Scholium" for the unified personhood of the God who is "all eye, all ear," his gesture is a powerfully dialectical one: the Irenaean assertion of the personal, willful God of scripture can't be fully disentangled from the contemporary controversy over the possible deist implications of Xenophanes's original use of the image.

And Xenophanes was not alone in using the image of a God of diffused percipience to forward a pantheistic proto-deism. Among those who followed Xenophanes to score the same point against theological anthropomorphism and the personalization of God was a later literary figure, far more familiar than Xenophanes in Newton's time, the first-century Roman naturalist Pliny the Elder, whose *Naturalis Historia* was not only the natural philosophical and geographic encyclopedia of its own day, but also a popular text, both in the original Latin and in English translation, throughout the seventeenth century. In a chapter of his work's second book, titled "Of God," Pliny warns against the lamentable human instinct to "to seek after any Shape of God, and to assign a Form and Image to him, [which] is a Proof of Man's Folly": "For God, whosoever he be (if haply there be any other, but the World itself), and in what Part soever resident, all Sense He is, all Sight [totus visus], all Hearing [totus auditus]: He is the whole of the Life and of the Soul, all of Himself."[14] Far from consciously exercising dominion over the world, Pliny's God, as he tells us, may be nothing other than "the World itself."

The conceptual dilemma underlying the conflicted literary history behind the Irenaean God who is "all eye" and "all ear" should be apparent at once. The image of the unitary deity who is "all similar" may have worked, for Newton, as an important counter against the bad logic of orthodox Trinitarianism, which mistakenly subdivided the unitary God into the distinct entities of Father, Son, and Holy Spirit. But the image of the homogeneously pan-perceptive God surely also troubled Newton's struggle to differentiate himself from the contemporary abstraction of God performed by the deists. The examples of Xenophanes and Pliny seem in fact to damage Newton's argument against the deist image of a God whose omnipresent physicality is coextensive with the universe itself. They are much more easily read, rather, to figure forth a version of deism *avant la lettre*, an early version of the God of impersonal natural process who is precisely the being whose existence Newton has set out to confute. Newtonian physics seemed logically to demand a deist God of impersonal regularity, while Newtonian theology required a personal God who freely and deliberately effects the events of creation and redemption. The conflicted message of the collated precursors behind Newton's image of the God who is "all eye, all ear" exposes the anxiety informing the most challenging of the physicist's intellectual ambitions: the desire to square his theocentrism with the uncompromising impersonality of his own mechanical model of the universe.

Our speculation concerning the cultural energies informing Newton's conflicted image of a God whose capacity for perception and understanding was mysteriously all in all is not quite complete. There was at least one more source to which Newton was likely indebted for the representation of God as an omnipresent mass of non-localized perceptivity, intellection, and action. I want to venture here the conjecture that Newton is additionally obliged, for his claim that God is "all eye, all ear," to the grand old heretic John Milton, whose *Paradise Lost* had attributed pan-corporeal percipience not to God, but to God's angels. In fact, as I will suggest here, it is Milton who articulates a heretical theory of creation of the world that enables Newton to manage the conceptual contradiction we have seen manifest in the literary history of the image of the divine being who is "all eye, all ear." It is the idiosyncratic, heretical Arianism of Milton's epic, as we shall see, that best modeled for Newton a way to square the fact of his discoveries of the truths of nature with his ongoing theological and epistemological struggle to understand how it is that he, the imperfect creature Isaac Newton, could be in a position to make those discoveries.

For a recent, seventeenth-century instance of the ancient image of a divine being whose capacities of perception and understanding were diffused throughout his being, Newton needed only to turn to book six of *Paradise Lost*. In the representation of the war in heaven in Milton's epic, the narrating archangel Raphael describes for Adam the impassability of angels on the battlefield of heaven:

> for Spirits that live throughout
> Vital in every part, not as frail man
> In Entrails, Heart or Head, Liver or Reins
> Cannot but by annihilating die;
> Nor in thir liquid texture mortal wound
> Receive, no more that can the fluid Air:
> All Heart they live, all Head, all Eye, all Ear,
> All Intellect, all Sense, and as they please,
> They Limb themselves, and colour, shape or size
> Assume, as likes them best, condense or rare.[15]

Explaining to Adam that the liquid texture of angelic bodies makes mortal wounds impossible, Raphael launches into a digression, informed, as we have seen, by Xenophanes, Pliny, and Irenaeus, on the homogeneous constitution of the angelic body.[16] The Miltonic angel is not, as frail man, vital merely in his organs and central parts:

"In Entrails, Heart or Head, Liver or Reins." Milton's angels, rather, "live throughout / Vital in every part": "All Heart they live, all Head, all Eye, all Ear, / All Intellect, all Sense."[17]

There is an important question we can no longer delay posing. Did the great physicist, whose interests in literature are not overwhelmingly in evidence in the enormous body of his published and unpublished writings, actually read the epic poem by the great puritan poet of an earlier generation?[18] We should not be surprised to find Newton's signature on the flyleaves of copies of Pindar in Greek and of Ovid in Latin: those are texts that any student of a Renaissance grammar school might have owned.[19] And there is evidence of Newton's ownership of other classical literary texts in editions dating to his later years at Cambridge. But it has been pointed out as well that Newton, years after attending university, as Warden and then Master of the Mint, appears not to have had any of the English classics—"Chaucer, Shakespeare, Milton, Spenser, etc., etc."—in his library.[20] As Richard Westfall notes in his biography, a possibly apocryphal remark was made, years after Newton's death, that Newton had "described poetry as 'a kind of ingenious nonsense.'"[21] But even if poetry in general could be dismissed by Newton as "nonsense," we need not rule out entirely the possibility that one particular poem, *Paradise Lost*, might have made a special claim on his attention. It was, I would like to suggest, the public declarations of the scandalous Arianism that so many early readers detected in *Paradise Lost* that would have recommended that earlier generation's masterpiece to the physicist.

In the years before the appearance of the 1713 edition of the *Principia*, in the "General Scholium" of which, as we have seen, Newton paints his God in the colors of Milton's angels, the evidence of the heretical Arianism of Milton's epic had been proclaimed in print a number of times. As noted above, Milton would not articulate in print a formal theology of the Arian Son's createdness; that explicitly heretical discourse Milton reserved for the daring theological treatise he would not publish in his lifetime. But Milton would nonetheless use the palate of his epic poem to paint an implicitly Arian image of the created Son of God; and the subtler heresy of his poem would not be lost on his eighteenth-century readers. In 1698, John Toland, whose notorious deism Newton and his friend Samuel Clarke vehemently opposed, had written that *Paradise Lost* had long been "brand[ed]" with anti-Trinitarian "heresy."[22] Also in 1698, Charles Leslie had published his thoughts on the heretical Arianism of *Paradise Lost*, as would the literary critic John Dennis in 1704. And in 1710 the Earl

of Shaftesbury had taken Milton to task for the tacit Arianism of the scene in book five of the Father's elevation of the Son, the scene in which the Son, in Shaftesbury's words, is "declared generalissimo of all the armies of heaven."[23] Perhaps most important, Newton had since the 1690s been engaged in a serious intellectual relationship with Dr. Richard Bentley, the classicist and later the controversial editor of *Paradise Lost*, who surely knew Milton's epic as intimately as anyone in the early eighteenth century. We should for all these reasons permit ourselves to think that Newton had been drawn to read, or, at the very least, to explore the most controversial passages of Milton's notoriously Arian epic. And we may proceed, then, to speculate about the possible meanings of Newton's engagement with Raphael's account of the all-eye-all-ear constitution of the Miltonic angel.

As Frank Manuel has clearly demonstrated, Newton had scoured not only ancient philosophy but the fictional world of ancient mythology for evidence that the mechanical laws of nature he himself discovered had been discovered long before, intuitable as they were by the light of nature.[24] According to Manuel, Newton "was so terrified by the hubris of discovery of which he was possessed that, as if to placate God the Father, he assured his intimates and himself that he had broken no prohibitions against revealing what was hidden in nature, that he had merely uttered in another language what the ancients had known before him."[25] Given the insistence with which Newton argued that his own discoveries were but recoveries of past knowledge, an earlier generation's Arian epic of creation, with its presumption to sing of chaos and eternal night, might well have been difficult to overlook entirely. When, in the 1713 essay on God's dominion as "Universal Ruler" of the world, Newton had attributed this undifferentiated state of being to God, his stated purpose was to emphasize God's otherness and unknowability, traits that distinguished Newton's God from the impersonal, flattened-out God of the deists. But in reproducing the rhetorical structure and the conceptual import of Milton's distinction between the angelic and human body, Newton manages, perhaps unwittingly, to break down the very distinction between familiar creature and inscrutable creator he had been working in this passage to establish.

Needless to say, to suggest, as I do in this essay, that Newton read Milton and found a heretical kinship in the radical poet's representation of the interaction of divine and earthly matter, is not to rule out the possibility that Milton and Newton had gravitated independently to a decidedly idiosyncratic cluster of related natural philosophical and theological figures and principles. Whether the relation between

them is one of influence or of mere coincidence, we are nonetheless obliged to determine why either Milton *or* Newton would reach back to the fourth century to a heretical theology so long out of currency. A reading of Newton's Christological heresy in relation to Milton's, I propose, can supply an explanation for the striking and unpredictable turn both writers make toward the archetypal heresy of ancient Christianity.

Before we can fully understand the importance of Arianism for these two thinkers, let us first consider why Newton and Milton rejected the form of anti-Trinitarianism that did in fact enjoy a strong currency among many early modern English intellectuals. Socinianism was by far the most notorious, most rigorously argued, and most culturally dominant anti-Trinitarian theology throughout both Milton's and Newton's lifetimes. Forged initially by a Sienese jurist, Laelius Sozzini, and developed further in formal theological treatises by Laelius's nephew Fausto Sozzini (the Sozzini generally referred to as "Socinus"), Socinianism was the intellectually bristling, relentlessly logical reinvention of Christian theology that had scandalized Protestant Europe since 1594, when Faustus Socinus published a treatise on the Christian atonement that would prove one of the most controversial works of intellectual theology in the early modern period.[26] Although the cluster of beliefs that generally circulate under the name of Socinianism are rarely ever articulated, many aspects of Socinus's theology proved to be influential and were eventually taken up by various forms of Protestantism, in particular his redefinition of the concepts of faith and justification.[27]

But the feature of Socinian theology that was most shocking both in the early modern as well as our own period was its critique of the doctrine of the Trinity. The term "Socinian" had in fact by the middle of the seventeenth century come specifically to denote someone who accepted Socinus's refutation of the idea of the Trinity. The doctrine of the co-equality and co-essentiality of the three persons of the Trinity, forged at the fourth-century Council of Nicaea, is surely to this day the foundation of most Christian theologies, which still see the three persons of the godhead as distinct and distinguishable as they are inseparably, and unimaginably, united in one divine being, "God." Noting the absence of credible scriptural evidence to the contrary, the Socinians propounded the belief that Christ, although begotten on Mary by the Holy Spirit himself (as reported in scripture), had no existence in heaven before the birth of Jesus in Bethlehem. It is true that for Socinus and his followers, Christ would come to be

"adopted" by the Father into a subordinate position of divinity upon his ascension to heaven after his crucifixion and resurrection. And it is true that the Socinian Christ, after that post-ascension exaltation to a heavenly lordship, could at later points in time be deputized by the Father to perform heavenly work as if he *were* "God," or, as the Socinian preferred to call the Son when acting as the Father's proxy, "the Lord God." But the Socinian Son nonetheless had no existence either in heaven or on earth before Jesus's nativity. Throughout the seventeenth century, Socinians were widely denounced as modern-day Arians, that sect anathematized at the Council of Nicaea in 318. But Socinians did not, as the notoriously anti-Trinitarian Arians had twelve centuries before, date the generation of the Son of God to a premundane point in time, to a moment before the creation either of the heavens or of the known universe.

There is, to be sure, ample evidence of both Newton's and Milton's serious engagements with the philosophically rigorous, juridically minded writings of Socinus and of second-generation Socinians like Jan Crell. The pages of Maurice Kelley's edition of Milton's *On Christian Doctrine* are filled with notes of Milton's specific borrowings from Socinian theology for his argument against the existence of the Trinity in chapter five of the treatise. And Newton's manuscripts seem everywhere to evince a range of Socinian positions that Newton took up, and sometimes discarded, over what is likely a period of many years; there is in addition the smoking gun of Newton's ownership of at least eight volumes of Socinian theology.[28] But as invested as Milton and Newton may have been in some of the ethical and philosophical questions about Christianity that Socinianism had pushed so rigorously, neither the physicist nor the poet could commit to the Socinian doctrine that Christ had had no existence in heaven before the birth of Jesus.

For both men, a motive for rejecting the Socinian dating of the creation of the Son flowed from a shared commitment, though on different grounds, to the ancients. Unable to imagine a world in which the sages of classical culture and the prophets of the Bible were excluded from the truths of Christianity, Milton and Newton gravitated to the oldest of Christianity's anti-Trinitarian heresies, which happened also to posit the oldest anti-Trinitarian Christ. For Milton, the pressure to reject Socinianism involved the problem of the salvation of the ancients. If one can only be "saved by means of Christ," as Milton would argue in one of the chapters in *On Christian Doctrine* (*De Doctrina Christiana*) most influenced by the final section of Socinus's treatise *De Jesu Christo Servatore*, then, it would seem for Milton, Christ had

to be created in time to save the virtuous Hebrews and pagans who lived before the life of Jesus:

> It does not seem surprising that there are a lot of Jews, and Gentiles too, who are saved although they believed or believe in God alone, either because they lived before Christ or because, even though they have lived after him, he has not been revealed to them. In spite of this they are saved by means of Christ, for he was given and sacrificed from the beginning of the world even for those to whom he was not known and who believed only in God the Father. Thus those illustrious men who lived under the law, Abel, Enoch, Noah, etc., are honoured with an attestation of their true faith, although it is stated that they believed only in God.[29]

God honors Abel, Enoch, and Noah as Christians, as attesters of the true faith in Christ, even though they only knew to believe in God the Father. Tolerant and inclusive, Milton's God, as is suggested by the mention of the Gentiles, seemed likely also to consider as Christians the likes of Socrates and Quintius.[30] *Paradise Lost* would make especially plain the importance, with respect to the salvation of the ancients, of Christ's existence before the nativity of Jesus. Adam and Eve will at the beginning of book eleven offer to God their heartfelt repentance for their sin. Eager to assure us of their salvation, despite their existence before the earthly revelation of Christ, Milton will daringly depict a hitherto unrepresented act of mediation performed by the preexisting Son of God.[31] Because man, however earnestly repentant, is "Unskilful with what words to pray," the Son offers to accommodate for the Father man's feeble prayers: "Let me / Interpret for him" (*PL*, 11.32–33). Long before his incarnation as the human Jesus, the Son works to save Adam and Eve by performing an act of interpretive verbal mediation for the benefit of the Father. Committed to saving the greatest of the ancient Hebrews and the Gentiles, Milton had no choice but to spurn the Socinianism of his own day and revive the most ancient of the heretical anti-Trinitarian theologies available to him.

Like Milton, Newton was led to reject modern-day Socinianism out of a concern for the long period of ancient history before the birth of Christ. The manuscript drafts of Newton's projected history of the early church reveal his strong, heterodox belief that Christ had appeared, in person, to the great Hebrew Patriarchs: he "appeared to Adam in Paradise & to Cain & Noah & the Patriarchs & Moses & Ioshuah" ("D," 85^{r}). A good deal of research into the rich trove of Newton's still-unpublished manuscript speculations has shown us, additionally,

an image of the scientist deeply invested in the epistemological fantasy of the *prisca sapientia*, or ancient wisdom, the belief that in both scripture and classical literature there is expressed a hidden knowledge of the truths commonly thought to be discovered first in the modern age. For Newton, an examination of the ancients, whether Hebrew, Greek, or Roman, could bring to light the previously hidden fact of the ancient knowledge of the same mechanical laws of nature that contemporary natural philosophers, Newton in particular, were only now bringing back into view. An essential feature of Newton's faith in the *prisca sapientia* was the conviction that the ancients were in no way dependent on divine revelation for the knowledge they acquired of the laws of nature.[32] The mechanical and geometric truths structuring physical existence were discoverable by the natural power of reason, by means of which man could discern the facts of nature as well as acquire a rudimentary knowledge of God. And it was by the same application of natural reason employed by Newton himself that the ancients had preempted Newton's scientific discoveries, which were never anything more than modern *re*-discoveries. It was not an anxiety of influence from which Isaac Newton suffered, but an anxiety of originality. Concerned, as noted earlier, to prove to himself that his discovery of the physical laws of the universe had involved no transgression of illicit divine secrets, Newton was powerfully motivated to unearth evidence that he was *not* the first to reveal the truth of the mathematical principles by which creation operates. The mechanical principles at the heart of creation were in no way divine secrets, but physical truths accessible to man from the beginning of recorded history. And as we will see, it is his commitment to the transhistorical, rational accessibility of the world's mechanical laws that drew Newton to Arianism.

It must not be thought, I should add, that Arianism was in any way a likely form of heterodoxy on which Newton, or any of his contemporaries, might light. There is little evidence to suggest that there existed in early modern England a serious or widespread Arian movement, intellectual, congregational, or otherwise. Even Maurice Wiles, whose book *Archetypal Heresy* contains the best analysis of Newton's Arianism, can find few early modern Arians besides Newton, Clarke, and William Whiston, all men who knew each other well, and whose culturally idiosyncratic theological interests seem largely to have emerged as a consequence of their complex but intimate intellectual and social entanglements with one another. Newton, Clarke, and Whiston, and Milton in the preceding generation, were not Arians

because they found themselves gravitating to an exciting contemporary intellectual movement. The only Arian texts readily available were the ample, but derogatorily framed, citations of Arius in the writings of Athanasius (the fourth-century church father who triumphed over Arius and his followers at the Council of Nicaea, and whose deceptive villainy the obsessive and perhaps even paranoid Newton devoted hundreds of manuscript pages to exposing). Milton and Newton *were* attuned to the exciting contemporary analysis of Trinitarian orthodoxy emerging from the vibrant, and quickly evolving, theological engagements of seventeenth-century Socinians. But they found themselves rejecting many aspects of that contemporary heresy, and, I conjecture, for much the same reason. The Socinian creator was the *Father*, remote, inscrutable, and ultimately arbitrary in his administration of the redemption and in his proclamation of commands to be obeyed. As logically organized as Socinianism itself was, as ready as it was to think of divine justice in the culturally accessible juridical terms of Roman law, the Socinian *God* was bound by no strictures of reason or necessity; he was the very embodiment of will and arbitrary power; and his ways could only be known as they were revealed in scripture.[33] The Socinian creator was not one whose creation could be known or experienced with the epistemological certainty that both Milton and Newton required. Turning instead to the church father Athanasius, and constructing a version of Arianism out of the fragmented record that his heresiographical writing had ironically kept alive, Milton and Newton constructed a version of an ancient heresy that enabled them to imagine the created world as a phenomenon that could be understood and known.

IV. TASK TRANSFERRED FROM FATHER TO HIS SON

Who created the world that the poet and the physicist were determined to understand and know? The evidence suggests that the answer to that question, for Milton, was not as straightforward as one might expect. In his theological treatise *On Christian Doctrine*, likely written a few years before he began work on *Paradise Lost*, Milton takes pains, as he works to confute the errors of Trinitarianism, to establish the Father as the only supreme God and the only prime agent in the work of creation. Milton's Arian Father and his created and therefore inferior Son were not, Milton insists in the treatise, equal collaborators in the work of creation: "For the Father is not only he *by* whom [a quo], but also he *from* whom, *in* whom, *through* whom, and

on account of whom all things are . . . inasmuch as he comprehends within himself all lesser causes. But the Son is only he *through* whom [per quem] all things are, and is therefore the less principal cause."[34] Laboring to assert the traditional Arian position of the superiority of the uncreated Father to the created Son, Milton would insist in the treatise that the world could not be considered created "by" the Son, for the Son was only the vehicle through whom the Father actively performed the work of creation. In *Paradise Lost*, however, Milton will wrest from the Father some of his exclusive creative agency and ascribe it to the Son. With respect to the first act of creation—the production of heaven and the angels—the pious angel Abdiel, in his argument with Satan after the Son's exaltation to his headship over the angels, describes the begotten Son as he

> *by* whom
> As by his Word the mighty Father made
> All things, ev'n thee, and all the spirits of Heav'n.
> (*PL*, 5.835–37; emphasis mine)

Abdiel will go even further to add an appositive phrase to the line just quoted about the createdness of "all the spirits of Heav'n": "By him created in thir bright degrees" (*PL*, 5.838). The spirits of heaven are created *by him*? Who is *he*? The zealous Abdiel, we are obliged to assume, is likely toeing the official Miltonic theological line here, reproducing Milton's argument from *On Christian Doctrine* to imply that the angels were "created by" the Father. But the syntactically most obvious reading of Abdiel's "him" in line 538 is the created Son, who will unquestionably occupy the pronouns "he" and "his" in the lines just following: the pronominal antecedent in "his reign" (*PL*, 5.841) and "he the head" (*PL*, 5.842) is unmistakably the Son. Where the treatise is unequivocal in its attribution of the primary action of creation to the Father, the poem, eager to establish the *bona fides* of its hero the Son, permits itself to waver on the crucial question of creation's principal cause. Satan, to be sure, senses immediately the implications of Abdiel's lack of clarity on the question of the agency behind creation. He hears in Abdiel's argument not Milton's official claim that the Son was merely he *through* whom the Father performed the work of creation, but a claim rather that the Son was the creator himself, having been given by the Father sole responsibility for that originary act of creation that produced heaven and the angels. Abdiel has implicitly asserted, Satan suggests, that the creation of heaven and the angels was not the work of the Father, but rather

the work
Of secondary hands, by task transferred
From Father to his Son.

(*PL*, 5.853–55)

Poised to mount his own, far more heretical, argument for angelic *self*-creation, Satan is in fact eager to counter *any* theory of the divine creation of heaven and the angels, whether that theory posits the Father or the Son as the principal agent of creation. But in teasing out the logic of Abdiel's implicitly Son-centered cosmogony, Satan unveils for us the boldness with which Milton will make the heretical Arian theology of his *Christian Doctrine* even more heretical in *Paradise Lost*.

The next creation in which the Son plays a part in *Paradise Lost* is, at least for us humans, of greater significance than that of heaven and the angels. The creation of the known universe will be dutifully framed by the narrating angel Raphael as the product of "The Almighty's will" (*PL*, 7.181). But the actual work of creation, put into effect by the Son alone, is presented unequivocally as a task transferred from the Father to the Son: Milton makes it virtually impossible for us to imagine the Son as the passive vehicle "*through* whom" the Almighty Father creates. "With Radiance crown'd / Of Majesty Divine" (*PL*, 7.192–93), the Son begins the work of creation as the grandest of heroes at the launch of a splendid martial excursion:

the Son
On his great Expedition now appear'd,
Girt with Omnipotence.

(*PL*, 7.193–95)

Attuned to the etymology of his startling noun "Expedition," Milton represents the Son at the verge of this most consequential act of creation as one who has been literally expedited, or whose feet have been set free (from Latin *ex* + *pedis*). Fully authorized by, and now unfettered by, the Father, the Son has been released from the shackles of filial duty and is empowered to make something new. But it is the poet, Milton, embarking on his heretical representation of the creaturely creator, who emerges at this moment as the most unfettered: freed from the constraints of theological propriety that had in the treatise limited the agency behind creation to the Father alone, Milton boldly asks us to imagine the labor of creation as one undertaken entirely by the first of creatures.

Newton will follow Milton's lead in the heretical representation of the creation as a task transferred, a work of secondary hands. Instinctively

more cautious than Milton, and less prepared than the poet to face the consequences of a direct articulation of Christological heresy, Newton will not permit himself explicitly to say in print that the universe was created by a creature. But a careful reading of his explanation of the agent behind creation in the 1713 "General Scholium" reveals Newton's unmistakably heretical daring. As we have seen, Newton is at pains to establish at once the alterity and the familiarity of the creator, to whom he will refer with prudent, noncommittal opacity as "this Being." But he is also concerned to parse the difference between the "Supreme God," the uncreated being Milton will call the "Father," from the "Son of God," the created being who can occupy an appointed position of dominion over the entire world and thus merit the title "Lord God" or "Universal Ruler":

> This Being governs all things, not as the soul of the world, but as Lord over all; and on account of his dominion he is wont to be called *Lord God* . . . or *Universal Ruler*; for *God* is a relative word, and has a respect to servants; and *Deity* is the dominion of God not over his own body, as those imagine who fancy God to be the soul of the world, but over servants. The Supreme God is a Being eternal, infinite, absolutely perfect; but a being, however perfect, without dominion, cannot be said to be Lord God; for we say, my God, your God, the God of Israel, the God of Gods, and Lord of Lords; but we do not say, my Eternal, your Eternal, the Eternal of Israel, the Eternal of Gods; we do not say, my Infinite, or my Perfect: these are titles which have no respect to servants. The word *God* usually signifies *Lord*; but every lord is not a God. (*M*, 389)

In *Paradise Lost*, the Arian Milton had exposed his heretical understanding of the essential distinction between Father and Son only to the fittest of readers. When Milton's Father proclaims the Son's "Vice-gerent Reign" (*PL*, 5.609) to the assembled angels in heaven in book five of *Paradise Lost*, he announces the honorific to which the promoted Son will be entitled: you "shall confess him *Lord*" (*PL*, 5.608). Elsewhere in the epic, Milton's Son passes as "God," and is called "God" by the narrator of *Paradise Lost*, even the "King of Glory," when he plays his official role in the events of the creation and of the judgment of Adam and Eve after the fall (*PL*, 7.208). But while in *Paradise Lost*, Milton's careful if subtle signposting makes it clear whether the figure called God is the Father or Son, in the published writings of the more cautious Newton, that distinction is not always treated with the precision it might seem logically to deserve. The

figure to whom Newton refers as God in the "Scholium" seems at times to have the characteristics of the Father, and is often referred to by Newton as the "Supreme God," a title, like that of the Arian's designation "most high," that certainly suggests the Father: uncreated, he and he alone is "eternal." But at least as often, the being hailed as God in the "Scholium" appears to do the work of the Son, or the figure to whom Newton refers as the "Lord God."[35]

In the public space of the "General Scholium" of the second edition of the *Principia*, Newton takes pains not explicitly to betray the heretical identity of the Creator as the creaturely Arian Son of God. But as Milton had in the theological treatise, Newton articulates the relative status of the terms "God" and "Lord," either of which can be meaningfully applied in different circumstances to either the Father or the Son. Newton is concerned to avoid any discriminating reference that mentions either the "Father" or the "Son" in his discussion of "God," but the "Being" called "Lord" or "God" can in fact for Newton be either Father or Son, as Newton makes clear in one of the more unguarded moments in a manuscript version of his Arian speculation in the "Scholium."[36]

When Newton in the "Scholium" muses on the divine governor's provisional entitlement to the appellation "*Lord God*," the logic of his distinction between appointed Lord and the eternal "Supreme God" obliges us to understand the identity of that "Universal Ruler" not as the creator Father but the creature Son. It is no one but the Son, the being who for Newton in the "General Scholium" "governs all things," who serves as Newton's creator. "God does nothing by himself," Newton had once speculated, "which he can do by another"; and it is this radically delegatory impulse of the Father's by which the work of creation was placed in the hands of the created Son.[37]

In one of the drafts of his history of the church, Newton depicts "the first age of Christianity" as a pre-Trinitarian ecclesiastical community tolerant of distinct positions on matters of Christology ("D," 116^{r}). Mapping onto the religious culture of the early church the theological tensions by which he was himself riven, Newton pictures the civil relations between two groups who disagreed on the chronology of the Father's creation of Christ:

> For in the first age of Christianity there were Christians (especially among the Iews) who beleived that Iesus took his beginning from the Virgin Mary, & for his vertue was chosen before other men & annointed king of the Iews by the Holy Ghost & thence called the

> Messiah or Christ that is the annointed, & there were other Christians (especially among the Gentiles) who beleived that Iesus was before the world began & that the world was created by him. And these two sorts of Christians conversed together as brethren & communicated with one another as members of the Catholick Ch. ("D," 15.7, 122v)

It was universally understood in the ancient church that Christ was created. But the early Jewish Christians, "who believed that Iesus took his beginning from the Virgin Mary," clearly anticipated, for Newton, the early modern Socinians, who dated the creation of Christ to the birth of Jesus. And the early Gentile Christians, "who believed that Iesus was before the world began," looked ahead to the Arians whom Newton himself favored, the early Christians who alone held the real truth of the Father's premundane creation of Christ. Newton goes even further here, and throughout his manuscript drafts, to insist that the proto-Arian Gentile Christians also maintained the belief—one to which Newton himself subscribed—that the "world was created by" the creature Christ. And, in fact, throughout the drafts for his ecclesiastical history, Newton would insist that the secret truth embraced by the earliest Gentile Christians, a truth whose content was so unassimilable that the church would never compel its members to subscribe to it, was the doctrine of Christ's creation of the universe. It was understandable, Newton explained, that one of the earliest and most liberal of the church's creeds, the Apostles' Creed, held its adherents to the minimal belief in the Father's creation of the world. But the higher, more challenging, truth, for Newton, was the fact that the "God" who created the universe was not the Father, but the created Son. Newton would explain repeatedly in these unpublished writings that the early church wasn't wrong to teach the simplest of the early Christians the doctrine of the creation by the Father: the more readily acceptable belief in the Father's creation was designed for oral transmission to the illiterate. But the higher truth, which Newton would always identify as the Christological position held by the earliest Gentile Christians, was the doctrine of "the Creation of the world by Iesus Christ" ("D," 102v).[38] The Arian doctrine of the creation of the world by a created Christ was so controversial, so difficult to accept, Newton explains, that the church never required its acceptance for baptism or communion, and never held it to be a necessary belief for the purpose of salvation. But, as Newton makes clear in his private heretical musings, it was true.

Our inferiority to divinity, whether God or angel, is, for both Newton and Milton, a fact; but despite Newton's insistence on God's qualitative otherness, man's inferiority emerges in Newton, as it does in Milton, as one more of degree than of kind. For Milton, it is in part by virtue of the radical ontological affinity we share with a divine being like that of the angel that we are able, as human creatures, both to "read the secrets of the hoary deep" (*PL*, 2.891) and "justify the way of God to men" (*PL*,1.26). For Newton, the implications of our ontological ties to divinity may be even more radical. More unequivocally than Milton, Newton abbreviates the epistemological gulf between God and man, ennobling the human modes of sensory perception by attributing a version of them not merely to an angel, but to the creating "God" himself. Against the backdrop of a continuum containing both the human and divine modes of perception and understanding, the natural world could be imagined all the more readily to yield to the inquiries of the perceptive and understanding natural philosopher.

Milton's Son in *Paradise Lost* takes his golden compasses from God's eternal store, and demonstrates his geometric acumen, or understanding, by circumscribing "this Universe, and all created things" (*PL*, 7.227). Might we not think that the agent of creation in *Paradise Lost* must be himself a created being because his very createdness makes possible the seamless continuum of earth and heaven in Milton's poem? When wondering how he might "unfould" for Adam the "secrets of another world" as he begins his narrative of the events leading up to the war in heaven, Raphael suggests initially that he can delineate those events solely by the work of analogy, likening spiritual to corporal forms:

> how last unfould
> The secrets of another world, perhaps
> Not lawful to reveal? yet for thy good
> This is dispenc't, and what surmounts the reach
> Of human sense, I shall delineate so,
> By lik'ning spiritual to corporal forms,
> As may express them best; though what if Earth
> Be but a shaddow of Heav'n, and things therein
> Each t' other like, more then on earth is thought?
> (*PL*, 5.568–76)

No sooner has Raphael explained the requirement to accommodate heavenly truth in a discursive form accessible to man than he offers

a speculation about an even closer relation of spiritual to corporal forms than the one of analogy. What if, he asks, things on earth and heaven be "each t' other like, more then on earth is thought?" What if the tie that binds earth and heaven owes more to their ontological continuity than to a mere rhetorical trick of analogy, or accommodation? The creaturely perception of time, Raphael conjectures, may well be adequate to the work of understanding the seemingly otherworldly phenomenon of eternity. Our human sense of time may be meaningfully applied to all matter in motion, measuring present, past, and future even in the eternity of heaven.

When Milton's narrating archangel Raphael resumes the topic of creation next, in the epic's book 7, it becomes clearer why Milton would in *Paradise Lost* counter his own theological position in the *Christian Doctrine* and encourage our sense that the world's real creator is not the uncreated Father but the created Son. The Son has also been given the honorific title of the "Word," and it is as God's "Word" that the Son "g[i]ve[s] effect" to the Father's verbal command of creation:

> So spake th' Almightie, and to what he spake
> His Word, the Filial Godhead, gave effect.
> Immediate are the Acts of God, more swift
> Then time or motion, but to human ears
> Cannot without process of speech be told,
> So told as earthly notion can receave.
> (*PL*, 7.174–79)

In juxtaposing in this passage the Son's work of creation and the poet's (and our) work of understanding that creation, Milton minimizes any significant distinction between the theological problem of creation and the epistemological problem of the human comprehension of that creation. It is a "process of speech" by which Raphael accommodates the divine truth of creation, making it assimilable to the "earthly notion" by which Adam can receive the truth. And, in a manner that Milton does not assert, but certainly implies, it is also a "process of speech" by which the Son will create at the Father's command: the Almighty speaks, and the Son, who almost seems begotten into existence as the very "Word" spoken, puts the command of creation into effect. Through the mediatory work of Milton's created Son, a mysteriously verbal form of creaturely understanding, straddling the seemingly distinct spheres of the divine and human, at once effects the creation itself and makes that creation knowable by the human creature.

Newton, I suggest, follows Milton's Raphael in his hopeful equivocation on the epistemologically loaded question of the likeness of earth to heaven. Where Milton's Raphael suggested that earth and heaven may be more like one another than we typically think here on earth, Newton would in the "General Scholium" posit a "certain similitude" between man and God, "which, though not perfect, has some likeness." If the Arian myth of the creature's creation of the universe could provide a conceptual foundation for some of the more radical aspects of Raphael's epistemological musings in *Paradise Lost*, in Newton the myth would do even more. Newton's Arian speculations suggests that he was able, at least at times, to imagine a Son far more radically creaturely than anything Milton asks us to envision in *Paradise Lost*.

In what form did Newton's Arian Christ create the world? Was it in this shockingly personal, human shape, in the "consistence of flesh and bones," that the Son created the universe and the human beings therein?[39] In a daring conjecture he never published, Newton explained that the Son, as the "Word" invoked in the gospel of John, "was made flesh" because his being could be knowable only through the senses of the flesh (John 1:1, Authorized Version). As his corporeality was that by "which he had been visible & audible & tangible," it was only by his embodiment that we could see, hear, and touch—in short, for the empiricist Newton, to *know*—his being ("D," 15.5, 96[v]). Creation can be understood and known through the senses only because the embodied creator could be sensed.

Or was it in a different, more alien, consistency altogether, in which Newton's Son of God chose to perform the work of creation? We had noted earlier Newton's suggestion in the "General Scholium" that God was a living, personal, deliberative being. And we had noted the tension between that living, personal God and the impersonal God of natural process celebrated by Xenophanes, Pliny, and surely others who invoked an image of an impersonal divine being, all eye, all ear, whose diffusely extended corporeality was, like the God of the deists, identical to the world itself. The difference between a thinking being external to creation and a being-as-process identical with creation may have struck us as a stark one, and one that exposed a contradiction in Newton's thinking about God and his creation. But Newton's use of Milton's radical image of free, unfettered divine choice may well have enabled him to imagine his creator as *either* a personal God *or* a God of impersonal process. The decidedly Miltonic freedom that Newton accords his Son enables that creator to choose, "by the power of his will," whether to assume a familiarly personal shape in the human form

of "flesh and bones," or to distribute, or dissipate, his perceptual and comprehensive faculties throughout the entirety of creation, willing himself into the form, when he chooses, of the abstract God of the deists, or of the God of Xenophanes and Pliny before them.[40]

Or is it, finally, that Newton's Son of God chooses both modes of being as he performs the work of creation, in the way, say, that Milton's angels "Can either Sex assume, or both" (*PL*, 1.424)? It is, I would suggest, both the personal God and the God of impersonal spatial extension of whom Newton writes in one of the most famous, indeed notorious, passages of the 1706 edition of the *Opticks*, in which space is described as God's "boundless uniform Sensorium": "God, a powerful, ever-living Agent, who being in all Places, is more able by his Will to move the Bodies within his boundless uniform Sensorium, and thereby to form and reform the Parts of the Universe, than we are by our Will to move the Parts of our own Bodies."[41] Here in the *Opticks*, it is not just that the living, deliberative God has willed himself into the form of the Miltonic angel who is all eye, all ear. All of space—saturated, it would seem, by God's homogeneously diffused sensation—is itself all eye, all ear, all brain. And this space, which certainly seems coextensive with God as a disintegrated form of homogeneously percipient omnipresence, is at the same time inexplicably governable by the personal will of the ever-living, but created, creator Son**.** Newton's creator must be both the personal God of Irenaeus and the impersonal God of Xenophanes and Pliny, because both modes of divine manifestation are required if the human inquirer is to understand and know creation. The "uniform Sensorium" by which God accommodates himself in the radically sensate world makes creation perceivable by the senses of the scientist. But the creator God must also be a God of deliberative will, because the human inquirer's will to understand must find its answer in the divine creator's will to be understood. Because the creator God invoked in the published editions of the *Principia* and the *Opticks* is discoverable as the creaturely Arian Son of God, then the physical space of the universe, materially constituted by Christ's bodily capacities for perception and understanding, is lying in wait for the perception and understanding of the natural philosopher seeking both to know God and to divine his invisible laws.

Newton nowhere draws together the coordinated actions of creation and inquiry so clearly as in a letter he wrote to the future editor and annotator of *Paradise Lost*, Dr. Bentley. No first agent, or God, Newton explains to Bentley, could have created "the beautiful system of sun, planets, and comets" had he not

> *understood* & compared together the quantities of matter in the several bodies of the Sun & Planets & the gravitating powers resulting from thence. . . . And to compare & adjust all these things together in so great a variety of bodies argues that cause to be not blind & fortuitous, but very well skilled in Mechanicks & Geometry.[42]

In this most shocking of all Newton's accounts of creation, the creator is seen not merely to make possible the human scientist's discovery of the laws that govern the universe's system of planets and stars. The creator is not even presented unequivocally here as the origin of those physical laws. The creator rather must be a "very well skilled" scientist himself, since the work of creation is dependent on his prior understanding of the mechanical laws of nature whose origin may well exist outside himself. The created Son, or the "Lord God" of creation, and the created physicist, or Sir Isaac Newton of the *Principia* and the *Opticks*, are engaged in a mutual, creative activity of perceiving and understanding. As a percipient and understanding being himself, the inquirer into the mechanic and geometric laws of nature reproduces the filial God's labor at the creation, a labor that appears in the letter to Bentley to be one of skilled scientific understanding. Newton's version of the time-honored heresy of Arianism lays the groundwork for a shockingly level epistemological playing field: the mechanical laws of the universe can be understood by the natural philosopher skilled in mechanics and geometry because they have first been understood by the creator, likewise skilled in mechanics and geometry, and likewise tasked with the obligation to perceive and understand. Perhaps the only creator that Newton could believe in, and certainly the only creator Newton could know, was a fellow creature whose genius for understanding the laws of the universe could begin to rival his own.

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NOTES

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[1] Maurice Wiles, *Archetypal Heresy: Arianism through the Centuries* (Oxford: Clarendon, 1996).

[2] The common scriptural phrase "most high," one of the most common Old Testament epithets for God (Gen. 14:20, for example), was frequently cited by anti-Trinitarians as scriptural proof that the Father alone was the supreme deity. See John Smith, *A Designed End to the Socinian Controversie: Or a Rational and Plain Discourse to Prove that No Other Person but the Father of Christ is God Most High* (London, 1695). The

epithet could function as code for an anti-Trinitarian perspective, as in *Paradise Lost* (12.120), or Newton's *Observations on the Prophesies of Daniel and the Apocalypse of St. John* (London, 1733), 31.

[3] Other considerations of the ties connecting John Milton and Isaac Newton include Joseph Anthony Wittreich, "The Poetry of the Rainbow: Milton and Newton among the Prophets," in *Poetic Prophecy in Western Literature*, ed. Jan Wojcik and Raymond-Jean Frontain (Rutherford: Fairleigh Dickinson Univ. Press, 1984), 94–105; Rachel Trubowitz, "Reading Milton and Newton in the Radical Reformation: Poetry, Mathematics, and Religion," *ELH* 84.1 (2017): 33–62; and Stephen M. Fallon, "Milton, Newton, and the Implications of Arianism," *Milton in the Long Restoration*, ed. Blair Hoxby and Ann Baynes Coiro (Oxford: Oxford Univ. Press, 2016), 319–34.

[4] For a detailed discussion of the Socinian influence on later Arminian, or "Remonstrant," theology, see Jan Rohls's excellent essay, "Calvinism, Arminianism and Socinianism in the Netherlands until the Synod of Dort," in *Socinianism and Arminianism: Antitrinitarians, Calvinists, and Cultural Exchange in Seventeenth-Century Europe*, ed. Martin Mulsow (Leiden: Brill, 2005), 1–48.

[5] Milton argues for the arbitrary, as opposed to the necessary, creation of the Son in *On Christian Doctrine*; see *Complete Prose Works of John Milton*, 7 vol., ed. Maurice Kelley (New Haven: Yale Univ. Press, 1972), 6:211. For a discussion of Milton's reliance on the principle of divine freedom for the notion of human freedom, see my essay, "The Political Theology of Milton's Heaven," in *The New Milton Criticism*, ed. Peter C. Herman (Cambridge: Cambridge Univ. Press, 2012), 68–84.

[6] On Newton's opposition to deism, see James E. Force, "Newton's God of Dominion: The Unity of Newton's Theological, Scientific, and Political Thought," in *Essays on the Context, Nature, and Influence of Isaac Newton's Theology*, ed. Force (Dordrecht: Kluwer Academic Publishers, 1990), 75–90.

[7] One of the best discussions of deism, and of Milton's relation thereto, can be found in Abraham Stoll, *Milton and Monotheism* (Pittsburgh: Duquesne Univ. Press, 2009).

[8] Richard S. Westfall makes the case for the implicit deism of Newton's theology; see "Isaac Newton's *Theologiae Gentilis Origines Philosophicae*," in *The Secular Mind: Transformations of Faith in Modern Europe*, ed. W. W. Wagar (New York: Holmes & Meier, 1982), 15–34. Force argues strenuously against the idea; see "The Newtonians and Deism," in *Essays on the Context, Nature, and Influence of Isaac Newton's Theology*, 43–76.

[9] Newton, *Mathematical Principles of Natural Philosophy*, 2 vol., trans. Andrew Motte (London: Benjamin Motte, 1729), 2:387. Hereafter abbreviated *M* and cited parenthetically by volume and page number.

[10] Newton, "Drafts on the history of the Church (Section 6)," Yahuda Manuscript 15.6, fol. 109^{v}, National Library of Israel, Jerusalem, circa 1710–1720. Hereafter abbreviated "D" and cited parenthetically by manuscript and folio number.

[11] Robert M. Grant discusses Irenaeus's several Christianized versions of Xenophanes's image of God; see *Gods and the One God*, in *Library of Early Christianity*, ed. Wayne A. Meeks (Philadelphia: Westminster, 1986), 89–90.

[12] Translation of Xenophanes by James Adams, *Religious Teachers of Greece; being Gifford Lectures on Natural Religion Delivered at Aberdeen* (Edinburgh: T. & T. Clark, 1908), 198–211.

[13] Jonathan I. Israel, *Enlightenment Contested: Philosophy, Modernity, and the Emancipation of Man, 1670–1752* (Oxford: Oxford Univ. Press, 2006), 439.

[14] Pliny the Elder, *Pliny's Natural History, in Thirty-Seven Books*, 2 vol., trans. Philemon Holland (London: Wernerian Club, 1847): 1:35. Jacob Bryant noted Newton's indebtedness to Pliny's "totus visus totus auditus" in *Treatise upon the Authenticity of the Scriptures and the Truth of the Christian Religion* (Cambridge: T. Cadell, 1793).

[15] Milton, *The Complete Poetry of John Milton*, ed. John T. Shawcross (New York: Anchor, 1971), book 6, lines 344–53. Hereafter abbreviated *PL* and cited parenthetically by book and line number.

[16] Noel K. Sugimura has noted the debt here to Pliny; see *"Matter of Glorious Trial": Spiritual and Material Substance in "Paradise Lost"* (New Haven: Yale Univ. Press, 2009), 177.

[17] I discuss Milton's later use of the Xenophanic image in *Samson Agonistes*; see "The Secret of *Samson Agonistes*," in *The Miltonic Samson*, ed. Michael Lieb and Albert Labriola (Pittsburgh: Univ. of Pittsburgh Press, 1996).

[18] Although it is with perhaps too much confidence that he suggests that "Newton did not read Milton," Fallon offers a valuable account of the "active intellectual networks" by which the two men were likely connected (329).

[19] See Westfall, *Never at Rest: A Biography of Isaac Newton* (Cambridge: Cambridge Univ. Press, 1983), esp. 57.

[20] Richard De Villamil, *Newton: The Man* (London: Gordon D. Knox, 1931), 9.

[21] Quoted in Westfall, *Never at Rest*, 581.

[22] Quoted in Michael Bauman, *Milton's Arianism* (Frankfurt: Peter Lang, 1986), 283.

[23] Quoted in Bauman, 283. See also Fallon, who offers evidence of some later eighteenth-century opinions on the heretical Christology of *Paradise Lost* (324). The importance for Milton of his turn to Arianism is discussed by John Rumrich, "Milton's Arianism: Why It Matters," in *Milton and Heresy*, ed. Stephen B. Dobranski (Cambridge: Cambridge Univ. Press, 1998), 76.

[24] Frank Manuel explains that "in manuscript scholia to the *Principia* that date from the end of the seventeenth century he [Newton] expounded his belief that a whole line of ancient philosophers had held to the atomic theory of matter, a conception of the void, the universality of gravitational force, and even the inverse square law" (*The Religion of Isaac Newton* [Oxford: Clarendon, 1974], 23–24).

[25] Manuel, 23.

[26] See the excellent account of the early modern response to the *De Jesu Christo Servatore* (1594) in the first chapter of Sarah Mortimer's *Reason and Religion in the English Revolution: The Challenge of Socinianism* (Cambridge: Cambridge Univ. Press, 2009). Although his focus isn't trained on Socinianism, the same phenomenon is traced, with respect to Anglican theology of the later seventeenth century, by C. F. Allison, *The Rise of Moralism: The Proclamation of the Gospel from Hooker to Baxter* (New York: Seabury Press, 1966).

[27] See Dewey D. Wallace, Jr., "Socialism, Justification by Faith, and the Sources of John Locke's *The Reasonableness of Christianity*," *Journal of the History of Ideas*, 45.1 (1984): 49–66.

[28] Treatments of Newton's interest in Socinianism can be found in Robert Wallace, *Antitrinitarian Biography*, 3 vol. (London: Whitfield, 1850), 3:428–68; and especially in Stephen David Snobelen, "Isaac Newton, heretic: the strategies of a Nicodemite," The *British Journal for the History of Science* 32 (1999): 381–419; and "Isaac Newton, Socinianism and 'The One Supreme God,'" in *Socinianism and Arminianism*, 241–97.

[29] Milton, *On Christian Doctrine*, ed. Maurice Kelley and trans. John Carey, in *Complete Prose Works of John Milton*, 8 vol. (New Haven: Yale Univ. Press, 1953–82), 6:475.

[30] In *Paradise Regained* the Son of God names Socrates the "first and wisest" of all the ancient philosophers (4.293–94). David Quint has suggested to me that the Son in that poem also, perhaps more surprisingly, "esteem[s] the names of" the upstanding Romans "Quintius, Fabricius, Curius, Regulus" (2.446–47).

[31] See my discussion of the heretical anti-Trinitarian conceptual foundation of this scene in *Paradise Lost* ("Milton and the Heretical Priesthood of Christ," in *Heresy, Literature and Politics in Early Modern English Culture*, ed. David Loewenstein [Cambridge: Cambridge: Univ. Press, 2006], 203–20).

[32] On Newton's belief in the *prisca sapientia*, see J. E. McGuire and M. Rattansi, "Newton and the 'Pipes of Pan,'" *Records of the Royal Society of London*, 21.2 (1966): 126–134; and Manuel, 23–24, 43, 88.

[33] See John C. Godbey, "Interpretations of Socinian Theology," *Proceedings of the Unitarian Universalist Historical Society* 20.2 (1985): 62–75, esp. 66.

[34] Milton, *On Christian Doctrine*, 302.

[35] See Newton, "Passage on the faith Christ taught the disciples," Manuscript Source SL255.8, fol. 1^{r}, location unknown, circa 1710–1720, http://www.newtonproject.sussex.ac.uk/view/texts/normalized/THEM00358. Here Newton identifies Christ, as Milton had, as the being through whom God created the universe and the judge of Adam and Eve. For a different perspective on the reasons for which Milton and Newton imagine a preexistent Son of God acting as creator, see Fallon.

[36] "If the father or son be called *God*, they take the name in a metaphysical sense as if it signified Gods metaphysical perfections of infinite eternal omniscient omnipotent whereas it relates only to Gods dominion to teach us obedience. The word *God* is relative and signifies the same thing with Lord and King, but in a higher degree" (quoted in Manuel, 21).

[37] Quoted in Betty Jo Teeter Dobbs, *The Janus Faces of Genius: The Role of Alchemy in Newton's Thought* (Cambridge: Cambridge Univ. Press, 1991), 37. See also Wiles, 83.

[38] For the idea that the doctrine of the Father's creation of the world was one "easily remembred & propagated down to posterity by oral tradition amongst the barbarous nations," see "D," 15, 100^{r}.

[39] Newton, "On the Church," Martin Bodmer manuscript C-H 33, chapter 1, 10, cited in Wiles, 82.

[40] "[B]y the power of his will" is from Newton, "On the Church," 10.

[41] Newton, *Opticks: Or, A Treatise of the Reflections, Refractions, Inflexions and Colours of Light. The Second Edition, with Additions* (London: 1718), 379.

[42] Newton to Richard Bentley, 10 December 1692, fol. 4A-5, 4^{r}, Trinity College Library, Cambridge, emphasis mine.