

“GOD OF GODS, AND LORD OF LORDS:”
THE THEOLOGY OF ISAAC NEWTON’S GENERAL SCHOLIUM TO THE *PRINCIPIA*

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For the LORD your God is God of gods, and Lord of lords.
Deuteronomy 10:17

And he said unto them, Unto you it is given to know the mystery of the kingdom of God: but unto them that are without, all these things are done in parables: That seeing they may see, and not perceive; and hearing they may hear, and not understand.
Mark 4:11-12

Newton’s General Scholium¹

The General Scholium to the *Principia* has been characterized as “possibly the most famous of all Newton’s writings.”² If this is so, the General Scholium is the most well-known portion of one of the most important works in the history of science. There can be no doubt that the Scholium contains three of Newton’s most-cited lines. It is here that he proclaims that the “most beautiful System of the Sun, Planets, and Comets, could only proceed from the counsel and dominion of an intelligent and powerful being.” The General Scholium also offers the pronouncement that discoursing of God “from the appearances of things, does certainly belong to Natural Philosophy,” along with Newton’s often-misunderstood claim that on the cause of gravity he would “frame no hypotheses” (*hypotheses non fingo*).³ Although well known, this

¹For helpful comments and advice, I would like to thank Jean-François Baillon, Moti Feingold, Jim Force, Michael Hunter, Rob Iliffe, Scott Mandelbrote, Simon Schaffer, Larry Stewart and Paul Wood. Research was made possible through a Social Sciences and Humanities Research Council of Canada Doctoral Fellowship, a Queen Elizabeth II British Columbia Centennial Scholarship and the British Council. I also gratefully acknowledge the Fondation Martin Bodmer, Geneva, the Syndics of the Cambridge University Library, the Jewish National and University Library, Jerusalem, and the Provost and Fellows of King’s College, Cambridge for permission to quote from manuscripts in their archives. Transcriptions from Newton’s manuscripts represent deletions as strike-outs and insertions are enclosed within angle brackets. Translations from Latin texts are my own.

²I. Bernard Cohen, *Introduction to Newton’s ‘Principia’* (Cambridge: Cambridge Univ. Press, 1971), p. 241. Gale Christianson concurs (Christianson, *In the Presence of the Creator: Isaac Newton and His Times* [New York: Free Press, 1984], p. 531).

³Newton, *The Mathematical Principles of Natural Philosophy by Sir Isaac Newton: Translated into English by Andrew Motte, 1729*, repr. with intro. by I. Bernard Cohen, 2 vols. (hereafter “Motte, *Principles*”) (London: Dawsons, 1968), 2: 388, 392. I have utilized this first, complete English translation of the *Principia* because its style and orthography coheres best with the language of the other eighteenth-century sources I cite. Until recently, the standard edition was Florian Cajori’s early twentieth-century revision of Motte’s translation. Cajori’s lightly revised text of the General Scholium can be found in *Sir Isaac Newton’s Mathematical Principles of Natural Philosophy*, trans. A. Motte and F. Cajori, 2 vols. (hereafter “Motte-Cajori, *Principles*”) (Berkeley: Univ. of California Press, 1934; 1962), 2:543-7. The Motte-Cajori translation of the General Scholium is also reproduced in *Newton’s Philosophy of Nature: Selections from His Writings*, ed. H.S. Thayer (New York: Hafner, 1953), pp. 41-6 and *Newton: Texts, Backgrounds, Commentaries* (Norton Critical Edition), ed. I. Bernard Cohen and Richard S. Westfall (New York: Norton, 1995), pp. 339-42 (in the latter case, Newton’s notes are omitted). The original Latin text with apparatus can be accessed through the variorum edition, *Isaac Newton’s Philosophiae naturalis principia*

theologically-charged appendix added to the second edition of the *Principia* has nevertheless not been well understood by most of its readers, and both the full range and the exact character of its theology have long proved elusive to those who have sought comprehension. Increasing access to crucial and clarificatory manuscript evidence, along with new research into Newton's theological thought over the past two decades, has brought us closer to this goal.

This paper begins with a summary of the more transparent natural theological apologetics of the General Scholium. Then follows an exposition of the distinctly biblical character of Newton's presentation of God therein. This leads into an exploration of some of the apparent unitarian surface features of the writing. Next follows an examination of the relationship between Newton's private papers and the public expression of his faith in the General Scholium—an examination that not only confirms a unitarian presentation of God, but establishes that Newton has also written into this document advanced antitrinitarian teachings and hermeneutics. After this, I provide further clarity by showing that important elements of Newton's theological and linguistic argumentation are identical to those found in a certain strand of contemporary heretical unitarian theology. These analogies allow us to move beyond the broad generalization that the General Scholium is compatible with a unitarian conception of God, to a much more precise characterization of its actively heretical theology. I then explore areas of interaction between Newton's theology and his natural philosophy and argue (*pace* Richard Westfall) that it does make sense to talk about the impact of the former on the latter. Finally, I discuss the wider implications of the presence of heresy at the conclusion of the *Principia* for Newton's private agendas in both natural philosophy and religion.

Having commenced with the external layer, therefore, we move from the natural theological through the biblical, unitarian and then the specialized antitrinitarian layers to the core of Newton's ambitious programme. As can be seen, the structure of this paper resembles that of a Russian doll. But this is only because Newton himself crafted the General Scholium in this manner: constructing layers of meaning ranging from the explicit to the increasingly veiled, from the exoteric to the esoteric, and from the public to the private. Access to the deeper meanings of the document in the early eighteenth-century depended either on the discernment of readers or direct knowledge of Newton's private thoughts. While we cannot hope to gain the levels of understanding of meaning and intention enjoyed by astute contemporary readers and the author's theological interlocutors, valuable guides can be found today in Newton's recently-released manuscripts and an awareness of the period's contested theological dynamics.

Loaded as it is with natural philosophical and theological apologetics, the General Scholium offers those who study the interaction of science and religion an important and particularly rich example from the early eighteenth century. It is perhaps in this document (and certainly among his public writings) that we see most clearly the inter-relationship between the natural philosophical and theological elements of Newton's programme. The importance of the General Scholium is also seen in its position within the *Principia*. Appearing as it does at the end of the second (1713) and third (1726) editions of the work, the Scholium acts as a conclusion for the book as a whole and a potent summary of Newton's main agendas. And its range is

mathematica, ed. Alexandre Koyré and I. Bernard Cohen, 2 vols. (Cambridge: Cambridge Univ. Press, 1972), 2:759-65. Valuable background and additional text-critical material can be found in Cohen, *Introduction to Newton's 'Principia'* (cit. n. 2), pp. 240-51. Finally, the General Scholium can be read in the completely new translation of Cohen and Anne Whitman, which appeared while I was revising this paper: *Isaac Newton, The Principia: Mathematical Principles of Natural Philosophy, a New Translation by I. Bernard Cohen and Anne Whitman, Assisted by Julia Budenz* (hereafter "Cohen-Whitman, *Principia*") (Berkeley: Univ. of California Press, 1999), pp. 939-44.

breathhtaking. In one short piece of not quite 1450 words,⁴ Newton rapidly moves through a litany of subjects, including cometography, gravity, planetary motion, the design argument, the plurality of worlds, space, tides, active powers and electricity. He also manages to discount Cartesian vortices, place himself in the vacuist-plenist controversy, lay out an agenda for experimental philosophy, insert a counter-blast against Gottfried Leibniz on the cause of gravity and advocate a natural philosophical methodology based on induction. On this basis alone the General Scholium would rank as one of the most powerful, densely-written and polemically-charged documents in the history of science. But there is more: for, as already adumbrated, among this impressive list Newton also embeds a series of profound theological themes—including ideas that go well beyond then-standard treatments of the design argument.

Two recent studies have advanced considerably our understanding of this latter dimension of the General Scholium. First, in a paper on Newton's God of dominion, James Force has pointed to the antitrinitarian nature of some of its language.⁵ Second, Larry Stewart has presented a detailed account of how the Scholium was read and understood as a heterodox document by the more perceptive among Newton's friends and foes alike. Stewart also builds a strong case to show that Newton was almost certainly using his General Scholium to support publicly his ally Samuel Clarke, whose unorthodox *Scripture-Doctrine of the Trinity* had appeared in 1712.⁶ By interpreting the more oblique language of the Scholium through Newton's less-allusive unpublished manuscripts and adding to this insight provided by hitherto unexploited parallels from the theology of the Radical Reformation, I extend the findings of these groundbreaking studies by demonstrating that Newton not only must have *intended* the General Scholium to present unorthodox theological, philosophical and linguistic argumentation, but that in so doing was informed by one of the most heretical movements of the period. The additional clarity provided by this evidence will hopefully shed further light on the purpose of the General Scholium: Newton's declaration of his commitments to a programme integrating his newly-

⁴In the third Latin edition.

⁵James E. Force, "Newton's God of Dominion: The Unity of Newton's Theological, Scientific, and Political Thought," in Force and Richard H. Popkin, *Essays on the Context, Nature, and Influence of Isaac Newton's Theology* (Dordrecht: Kluwer, 1990), pp. 75-102. See also Force's "The Nature of Newton's 'Holy Alliance' between Science and Religion: From the Scientific Revolution to Newton (and back again)," in *Rethinking the Scientific Revolution*, ed. Margaret J. Osler (Cambridge: Cambridge Univ. Press, 2000), pp. 247-70; idem, "'Children of the Resurrection' and 'Children of the Dust': Confronting Mortality and Immortality with Newton and Hume," in *Everything Connects: In Conference with Richard H. Popkin*, ed. Force and David S. Katz (Brill: Leiden, 1999), pp. 119-42; idem, "Newton, the Lord God of Israel and Knowledge of Nature," in *Jewish Christians and Christian Jews: From the Renaissance to the Enlightenment*, ed. Richard H. Popkin and G.M. Weiner (Dordrecht: Kluwer, 1994), pp. 131-58.

⁶Stewart, "Seeing through the Scholium: Religion and Reading Newton in the Eighteenth Century," *History of Science*, 1996, 34:123-65. See also his earlier "Samuel Clarke, Newtonianism, and the Factions of Post-Revolutionary England," *Journal of the History of Ideas*, 1981, 42:53-72. In both studies, Stewart points to exact parallels between the theology of the General Scholium and arguments presented in the Newtonian Samuel Clarke's *Scripture-Doctrine of the Trinity* (London, 1712). If there are any lingering doubts that Newton and Clarke were singing from the same hymn sheet, additional examples of analogies between Newton's General Scholium and Clarke's writings provided in this paper will hopefully put them to rest. Clarke was one of Newton's most intimate associates during the 1710s and 1720s. Clarke and another of Newton's disciples, William Whiston, came to theological positions similar to Arianism through contact with Newton. On these two, see J.P. Ferguson, *An Eighteenth Century Heretic: Dr. Samuel Clarke* (Kineton: Roundwood, 1976) and James E. Force, *William Whiston: Honest Newtonian* (Cambridge: Cambridge Univ. Press, 1985).

recovered natural philosophy and a biblicist, antitrinitarian faith.⁷

The *Principia* and the argument from design

In his famous letters to Richard Bentley, who had sought Newton's advice while preparing his Boyle Lectures for publication, Newton told his younger Cambridge colleague that he had composed the *Principia* with an aim to promote natural theology: "When I wrote my treatise about our Systeme, I had an eye upon such principles as might work wth considering men, for the beleife of a Deity & nothing can rejoyce me more then to find it usefull for that purpose."⁸ Newton also told Bentley that he was "forced to ascribe" the design of the solar system "to ye counsel & contrivance of a voluntary Agent" and, similarly, that "ye motions wch ye Planets now have could not spring from any natural cause alone but were imprest by an intelligent Agent."⁹ Thus, with Newton's help, Bentley put to use the physics of the *Principia* to serve the ends of religion when his lectures were published in 1693.¹⁰ This was but the first example of many such uses of this work. The next came in William Whiston's 1696 *New Theory of the Earth*—the first full-length popularization of Newtonianism—in which Newton's disciple demonstrated the great utility of the *Principia* for buttressing the design argument.¹¹ Whiston went on to extend the use of Newton's physics for natural theological purposes in his 1717

⁷Although numerous scholarly treatments of the natural philosophical material in the General Scholium are available, apart from those published by Force and Stewart, there are few substantive studies of its theology (by which I mean theology proper). This, despite the fact that Newton clearly believed this dynamic to be not only important but *integral* to his overall endeavour. Here it is worth noting that 58% of the General Scholium (842 out of 1448 words in the third Latin edition) deals directly with theology. J.E. McGuire's recent "The Fate of the Date: The Theology of Newton's *Principia* Revisited," in *Rethinking the Scientific Revolution*, ed. Osler (cit. n. 5), pp. 271-95 and *Tradition and Innovation: Newton's Metaphysics of Nature* (Dordrecht: Kluwer, 1995), treat, *inter alia*, Newton's theology of space and time in both the *Principia* generally and the General Scholium specifically. Shorter treatments of aspects of the theology of the General Scholium can be also found in Betty Jo Teeter Dobbs, *The Janus Faces of Genius: The Role of Alchemy in Newton's Thought* (Cambridge: Cambridge Univ. Press, 1991), pp. 35-7, 83, 190-3, 195, 197-8, 200-1, 205, 224, 226-9, 243-4; Richard H. Popkin, "Newton's Biblical Theology and His Theological Physics," in *Newton's Scientific and Philosophical Legacy*, ed. P.B. Scheurer and G. Debrock (Dordrecht: Kluwer, 1988), pp. 81-97, on pp. 91-4; Michael J. Buckley, "God in the Project of Newtonian Mechanics," in *Newton and the New Direction in Science*, ed. G.V. Coyne, M. Heller and J. Życiński (Vatican City: Specola Vaticana, 1988), pp. 85-105; Derek Gjertsen, *The Newton Handbook* (London: Routledge & Kegan Paul, 1986), pp. 463-4; Richard S. Westfall, *Never at Rest: A Biography of Isaac Newton* (Cambridge: Cambridge Univ. Press, 1980), pp. 352, 748-9, 825-6; I. Bernard Cohen, "Isaac Newton's *Principia*, the Scriptures, and the Divine Providence," in *Philosophy, Science, and Method*, ed. Sidney Morgenbesser et al. (New York: St. Martin's Press, 1969), pp. 523-48, on pp. 523-5; Louis Trenchard More, *Isaac Newton: A Biography* (New York: Dover, 1962; orig. publ. 1934), pp. 552-5. Cajori's notes on the theological portions of the General Scholium in Motte-Cajori, *Principles*, 2:668-70 offer some useful background. The pioneer of studies of the General Scholium's theology is Frank Manuel, who was the first to emphasize the powerfully Hebraic nature of this text (see Manuel, *The Religion of Isaac Newton* (Oxford: Clarendon, 1974), pp. 16-17, 20-22, 40, 74-6). For a recent overview of some of the natural philosophical aspects of the General Scholium, see I. Bernard Cohen's "The Concluding General Scholium," in his excellent "Guide to Newton's *Principia*" that precedes the 1999 translation (Cohen-Whitman, *Principia*, pp. 274-92).

⁸Newton to Bentley, 10 December 1692, *The Correspondence of Sir Isaac Newton*, ed. H.W. Turnbull et al., 7 vols. (Cambridge: Cambridge Univ. Press, 1961), 3:233 (the four letters appear on pp. 233-56). Newton's letters to Bentley were published in 1756, and a reprint of this edition, along with an introduction by Perry Miller, is available in *Isaac Newton's Papers and Letters on Natural Philosophy and Related Documents*, ed. I. Bernard Cohen, 2nd ed. (Cambridge, Mass.: Harvard Univ. Press, 1978), pp. 269-312.

⁹Newton to Bentley, 10 December 1692, *Correspondence* (cit. n. 8), 3:234.

¹⁰Bentley, *A Confutation of Atheism from the Origin and Frame of the World* (London, 1693). These lectures are reproduced in *Newton's Papers*, ed. Cohen (cit. n. 8), pp. 313-94.

¹¹Whiston, *A New Theory of the Earth, from Its Original, to the Consummation of All Things* (London, 1696).

Astronomical Principles of Religion.¹² Nevertheless, the first edition of the *Principia* displays little outward evidence of religious content. Indeed, the 1687 edition contains only a solitary reference to God (as creator) and a single mention of the Scriptures.¹³ This may at first seem surprising, as many seventeenth-century works that treated natural philosophy, including Descartes' *Principia philosophiae* (1644), abounded with direct references to God and theology. Two things need to be said here. First, as Andrew Cunningham has recently argued, explicit references to theological agendas in such works were not deemed a necessary imperative in an age when everyone understood that natural philosophy was at its fundamental level about God and His Works; the only time the tacit theological agenda needed to be stated openly was when the discipline appeared under threat of appropriation by irreligious interests.¹⁴ Second, it is also apparent that Newton—characteristically—acted with caution and forbearance. His above-cited acknowledgement to Bentley demonstrates this, as does a reply he made a short while later to a probing question of Whiston. The latter tells us that when he asked Newton why in the first edition of the *Principia* he did not draw out arguments “for the advantage of Natural Religion, and the Interposition of the Divine Power and Providence in the Constitution of the World,” the latter told him that “[h]e saw those Consequences; but thought it better to let his Readers draw them first of themselves.”¹⁵

It was only after the *Principia* began to be used for materialist interests (by John Toland), and then attacked by Leibniz for not only introducing occult qualities in its explanation of the cause of gravity, but also presenting a low view of God as Creator, that its author was moved to make what was implicit explicit.¹⁶ If his comment to Whiston was sincere, Newton may have come to realize that an over-subtle strategy on natural theology was fraught with danger and that readers of his great work needed counsel, guidance and even positive sermonizing to stay on the

¹²Whiston, *Astronomical Principles of Religion, Natural and Reveal'd* (London, 1717). Whiston later confirmed this polemical use of Newton in both of these books (Whiston, *A Collection of Authentick Records* [London, 1728], II:1073). James Force has provided cogent readings of Whiston's natural theological use of Newton in his development of the design argument (Force, “Newton's ‘Sleeping Argument’ and the Newtonian Synthesis of Science and Religion,” in *Standing on the Shoulders of Giants: A Longer View of Newton and Halley*, ed. Norman J.W. Thrower (Berkeley: Univ. of California Press, 1990), pp. 109-27, on pp. 123-5 (note 13); idem, “Linking History and Rational Science in the Enlightenment: William Whiston's *Astronomical Principles of Religion, Natural and Reveal'd*,” Introduction to the reprint of Whiston, *Astronomical Principles of Religion, Natural and Reveal'd* (Hildesheim: Goerg Olms Verlag, 1983), pp. 1-71, and idem, *William Whiston* (cit. n. 6), pp. 54-7.

¹³Newton expunged the brief reference to God in the second and third editions, although the erasure still left behind the hint at Design; the mention of the Scriptures was retained without alteration. See Cohen, “Isaac Newton's *Principia*, the Scriptures, and the Divine Providence” (cit. n. 7), pp. 525-30.

¹⁴Cunningham, “How the *Principia* Got Its Name; or, Taking Natural Philosophy Seriously,” *History of Science*, 1991, 29:377-92, on pp. 382-3.

¹⁵Whiston, *Authentick Records* (cit. n. 12), II:1073.

¹⁶For these background contexts (which must be taken along with Newton's probable motivation to support Clarke's *Scripture-Doctrine*) see Stewart, “Samuel Clarke” (cit. n. 6), pp. 54-7; Westfall, *Newton* (cit. n. 7), pp. 730-4, 744; and Motte-Cajori, *Principles*, 2:688-9. Leibniz's indirect attack on Newton was published in the *Memoirs of Literature*, Monday 5 May 1712, Vol. II, pp. 137-40. Ironically, with respect to Leibniz, the General Scholium itself gave the Hanoverian philosopher further material to attack, and many of the issues raised in both the *Principia* and its concluding General Scholium were played out in the subsequent Leibniz-Clarke debates (*A Collection of Papers Which Passed between the Late Learned Mr. Leibnitz, and Dr. Clarke, in the Years 1715 and 1716. Relating to the Principles of Natural Philosophy and Religion* (London, 1717); see especially pp. 51, 53, 357 where Clarke quotes from two portions (one theological and one natural philosophical) of the document). On these celebrated debates, see Ezio Vailati, *Leibniz & Clarke: A Study of Their Correspondence* (New York: Oxford Univ. Press, 1997) and Steven Shapin, “Of Gods and Kings: Natural Philosophy and Politics in the Leibniz-Clarke Disputes,” *Isis*, 1981, 72:187-15; *The Leibniz-Clarke Correspondence*, ed. H.G. Alexander (Manchester: Manchester Univ. Press, 1956).

right path.¹⁷ Moreover, in the changing world of the early eighteenth century, it was less possible to take the goals of natural philosophy for granted. For, in addition to the recent attacks on his natural philosophy, Newton and his closest followers had become increasingly exercised over the perceived rise in deism and unbelief.¹⁸ Already in the 1706 Latin edition of his *Opticks*, Newton had inserted four discussions of natural theology drawn out of his natural philosophy.¹⁹ And so it was that when he appended the General Scholium to the new edition of the *Principia* in 1713, Newton spoke forcibly therein that the solar system could only have proceeded “from the counsel and dominion of an intelligent and powerful being” and that the universe of stars “must be all subject to the dominion of One.”²⁰ Additionally, at the beginning of the treatise, Newton’s editor Roger Cotes expanded on the language and natural theological themes of the Scholium in his Preface. Cotes wrote that the *Principia* had opened up the secrets of the world, and thus “we may now more nearly behold the beauties of Nature, and entertain our selves with the delightful contemplation; and, which is the best and most valuable fruit of philosophy, be thence incited the more profoundly to reverence and adore the great Maker and Lord of all.”²¹ To this, Cotes adds the declaration: “He must be blind who from the most wise and excellent contrivances of things cannot see the infinite Wisdom and Goodness of their Almighty Creator, and he must be mad and senseless, who refuses to acknowledge them.”²² And thus, Cotes concludes, “*Newton’s* distinguished work will be the safest protection against the attacks of atheists, and nowhere more surely than from this quiver can one draw forth missiles against the band of godless men.”²³ Therefore, whatever emendations Newton had made to the physics and mathematics, the second edition, framed as it was between the signposts of the Preface and General Scholium, was a much more overtly apologetic and carefully theologically-positioned treatise.²⁴ With its explicit expressions of the argument from design, the Preface and General Scholium served to articulate in unequivocal terms the natural theological aims Newton claimed for the *Principia*.

¹⁷With regard to the religious and natural theological “Consequences” of the *Principia*, Whiston was happy to say that Newton “did in great measure” himself draw these out “long afterwards in the later Editions of his *Principia*, in that admirable *General Scholium* at its conclusion; and elsewhere, in his *Opticks*” (Whiston, *Authentick Records* (cit. n. 12), II:1073-4).

¹⁸James Force details the efforts of the Newtonians Whiston and Clarke to combat deism and infidelity from Whiston’s *New Theory* of 1696 to Clarke’s 1705 Boyle Lectures and beyond in his “The Newtonians and Deism,” in Force and Popkin, *Essays on Newton’s Theology* (cit. n. 5), pp. 43-73.

¹⁹In the final editions, these are found in Queries 28 and 31 (Newton, *Opticks, or a Treatise of the Reflections, Refractions, Inflections & Colours of Light* [New York: Dover, 1952], pp. 369-70, 400, 402-4, 405-6). The third discussion contains strong parallels to the treatment of the uniformity of design in Newton, King’s College, Cambridge, Keynes MS 7, p. 1.

²⁰Motte, *Principles*, 2:388-9; Motte-Cajori, *Principles*, 2:544; Cohen-Whitman, *Principia*, p. 940. Additional clarity on Newton’s feelings about natural theology can be found in his manuscripts. In his “Short Schem of the true Religion,” Newton describes atheism—the result of the rejection of the design argument, which should be accepted by all thinking men—as “se[n]seless and odious” (Newton, Keynes MS 7, p. 1r). This manuscripts dates from around the time of the second edition of the *Principia*.

²¹Motte, *Principles*, 1:[xxv] (Roman numbers assigned from the beginning of the Preface); Motte-Cajori, *Principles*, 1:xxxii; Cohen-Whitman, *Principia*, p. 398. The title “Maker and Lord of all” also appears in the General Scholium (Motte, *Principles*, 2:390; Motte-Cajori, *Principles*, 2:545; Cohen-Whitman, *Principia*, p. 941).

²²Motte, *Principles*, 1:[xxv]; Motte-Cajori, *Principles*, 1:xxxii-xxxiii; Cohen-Whitman, *Principia*, p. 398.

²³Motte-Cajori, *Principles*, 1:xxxiii; Cohen-Whitman, *Principia*, p. 398. The final paragraph of Cotes’ Preface is absent from the 1729 edition.

²⁴Like the General Scholium, Cotes’ Preface contains latent attacks on Leibniz and Cartesianism (A. Rupert Hall, *Isaac Newton: Adventurer in Thought* [Oxford: Blackwell, 1992], p. 363; Westfall, *Newton* (cit. n. 7), pp. 749-50).

The God of the General Scholium

Immediately after his introduction of the design argument, Newton moves seemingly quite naturally to a discussion of God and His attributes:

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 παντοκράτωρ, 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. It is the dominion of a spiritual being which constitutes a God; a true, supreme or imaginary dominion makes a true, supreme or imaginary God. And from his true dominion it follows, that the true God is a Living, Intelligent, and Powerful Being; and from his other perfections, that he is Supreme, or most Perfect.²⁵

It is at this juncture that the General Scholium departs decisively from other contemporary presentations of natural theology. In formulating the above material and that which follows, Newton has three main objectives. First, he is careful to show that his conception of God is far removed from that of the Deists. Second, and partly to serve the end of the first objective, he couches his language of the Deity in terms unambiguously biblical. Third, he introduces antitrinitarian hermeneutics to underpin a characterization of the Father alone as the One True God.

The God of the General Scholium has a continuing and active relationship with His Creation. Leibniz had criticized Newton's physics for their supposed imperfections, which required God to intervene occasionally to set Nature back on course.²⁶ Rather than backing away from this putative theoretical infelicity, Newton takes the high ground and affirms a God of dominion: "This Being governs all things, not as the soul of the world [*anima mundi*], but as Lord over all [*universorum dominus*]: And on account of his dominion he is wont to be called *Lord God παντοκράτωρ [dominus deus pantokratōr]*, or *Universal Ruler [Imperator universalis]*."²⁷ Neither is the word "God" a bare abstract concept. Rather, it obtains its meaning and significance from its relations: "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."²⁸ "The supreme God," Newton professes, "is a Being eternal, infinite, absolutely perfect; but," Newton adds, "a being, however perfect, without

²⁵Motte, *Principles*, 2:389; Motte-Cajori, *Principles*, 2:544-5; Cohen-Whitman, *Principia*, pp. 940-1. Quotations from the General Scholium are from the 1726 edition; important differences between the 1713 and 1726 editions will be noted.

²⁶In Leibniz's view, his own "System of the *Pre-establish'd Harmony*" was much to be preferred to the conclusion "that when God created the World, he made an imperfect Machine" (Leibniz, *Memoirs of Literature* (cit. n. 16), p. 140).

²⁷Motte, *Principles*, 2:389; Motte-Cajori, *Principles*, 2:544; Cohen-Whitman, *Principia*, p. 940.

²⁸Motte, *Principles*, 2:389; Motte-Cajori, *Principles*, 2:544; Cohen-Whitman, *Principia*, p. 940.

dominion, cannot be said to be Lord God.”²⁹ A God, Newton declares, “without dominion, providence, and final causes, is nothing else but Fate and Nature.”³⁰ Moreover, the Scholium places stress on the counsel and will of God.³¹ This voluntarist conception of God as an active, willful God of dominion establishes Newton’s position as opposing Deism.³² His is neither the abstract Deity of the ancient philosophers nor the remote, impersonal God of contemporary Deists,³³ and this Newton is intent on making absolutely clear to his readers.

One of the most striking features of the God of the Scholium is His thoroughly Hebraic and biblical character. Newton left no doubt that his God was none other than “the God of Israel.” Every last example of divine names, titles and attributes given in the Scholium are direct quotations from, or unambiguous allusions to, Scripture. Some of the expressions, such as “Lord God,” “the God of Israel,” “my God” and “your God,” occur in the Scriptures far too commonly to list in detail. Other examples are worthy of special consideration. The title “Lord God παντοκράτωρ” occurs six times in the New Testament and all within the Book of Revelation—a book with which the prophetically-minded Newton held a particular fascination.³⁴ The term παντοκράτωρ is found four additional times on its own in the Greek New Testament for a total of ten occurrences—all but one of which appear in the Apocalypse.³⁵ Newton has lifted one of the more distinctive titles, “God of Gods, and Lord of Lords,”³⁶ straight from Deuteronomy 10:17. As for the title “Lord of lords” (when applied to the Father), it appears in Psalm 136:3 and 1 Timothy 6:15. The Scholium’s “Maker and Lord of all things” finds a verbal parallel in Proverbs 22:2: “The rich and poor meet together: the LORD is the maker of them all.” Of course, the Bible also commonly characterizes God as Maker and Creator. The title “Lord over all” used in the Scholium comes directly from Romans 10:12 and the nearly identical variant “Lord of all” (also a component of the expression “the Maker and Lord of all things” cited above) appears in Joshua 3:11,13 and Zechariah 6:5, and has close parallels in Micah 4:13 and Zechariah 4:14. The similar title “Lord over us” appears in Psalm 12:4. Finally, all of the many attributes of God that Newton lists—such as “eternal,” “infinite,” “perfect,” “omnipotent,” “omniscient,” “omnipresent”—are well-attested in the Bible. Some of these appear in exactly the same form as in the Scholium, while others, such as the phrase “everlasting to everlasting” occur in near

²⁹Motte, *Principles*, 2:389; Motte-Cajori, *Principles*, 2:544; Cohen-Whitman, *Principia*, p. 940-1. Thus Newton is not completely satisfied with Descartes’ philosophical conception of God as an infinite and absolutely perfect being; these predicates are only acceptable and meaningful when conjoined with the necessary correlative of real and active dominion. On Descartes’s idea of God, see Jean-Marie Beysade, “The Idea of God and the Proofs of His Existence,” in *The Cambridge Companion to Descartes*, ed. John Cottingham (Cambridge: Cambridge Univ. Press, 1992), pp. 174-99.

³⁰Motte, *Principles*, 2:391; Motte-Cajori, *Principles*, 2:546; Cohen-Whitman, *Principia*, p. 942.

³¹Motte, *Principles*, 2:388, 391; Motte-Cajori, *Principles*, 2:544, 546; Cohen-Whitman, *Principia*, p. 940, 942.

³²Frank Manuel was among the first to point to Newton’s powerful sense of the Deity as a God of dominion. An early example of this can be found in his brilliant corrective to the claim Westfall made in the 1950s that Newton did not use ‘dominion’ with respect to God to “mean direct and immediate governance.” As Manuel rightly states, “Newton consistently maintained the contrary position in all his historical and prophetic works” (Manuel, *Isaac Newton, Historian* [Harvard: Belknap, 1963], p. 295 n. 73). The most comprehensive study of this feature of Newton’s theology can be found in Force’s essay “Newton’s God of Dominion” (cit. n. 5).

³³A specific, contemporary target of this presentation can also be found in Leibniz. The conclusion of Newton’s “An Account of the Book Entituled *Commercium Epistolicum*” makes plain Newton’s disdain for what he perceived to be Leibniz’s remote, non-intervening God (*Intelligentia Supramundana*) (for the text of “An Account,” see Cohen and Westfall, *Newton* (cit. n. 3), pp. 161-4).

³⁴The six examples of this title are in Revelation 4:8, 11:17, 15:3, 16:7, 19:6 and 21:22.

³⁵The four occurrences are in 2 Corinthians 6:18, Revelation 1:8, 16:14 and 19:15.

³⁶This phrase was inserted into the 1726 edition.

parallels (Psalms 41:13, 90:2, 93:2).³⁷ It is noteworthy, although perhaps not overly surprising, that many of these expressions and *nomina sacra* appear in prophetic portions of the Bible, where Newton not only devoted much of his scriptural study, but in which the Deity is portrayed particularly strongly as a God of absolute dominion.³⁸

But Newton is even more specific. The presentation of God in the Scholium is strictly unitarian and monotheistic in the Hebraic sense.³⁹ Newton's agenda is apparent from the second time he refers to God, where he uses the term "One" (*Unus*). While Trinitarians then and now also affirm the fundamental monotheistic dictum that God is One, Newton deploys this term to the exclusion of any language denoting tri-unity. But the use of this seemingly innocuous word is a hint that might not appear to have signified anything, if it were not for the fact that Newton adds a technical argument about the meaning of the term "God." Newton's argument that "God" is a relative term is not solely an argument about God's relationship to His Creation. At its core, this argument is antitrinitarian in intent. The standard Trinitarian position is that the term "God" is absolute and refers straightforwardly to nature and essence. Newton, on the other hand, argues that the word is relative, obtaining its meaning from power and dominion. To support this contention, in the third edition of the *Principia* Newton added a note to the General Scholium that supplies a hermeneutical apparatus to show how beings other than the "One" can be called "God" without making them "very God" (see Figure 1).⁴⁰ He does this by drawing attention to *loci biblici* where ordinary human beings are called "God" in an official sense. As Newton argued, only "true" and "supreme" (i.e. absolute) power and dominion made a true and supreme God, and, as the note on the term "God" further implies, relative power and dominion (such as that granted to lesser authorities like angels and kings who represented the true God) made honorary or delegated "Gods." Although not directly stated—the intended force of Newton's argument is that the term "God" can be applied to Christ without making the latter "very God

³⁷Motte and most other translators of the General Scholium have rendered the Latin "*ab aeterno in aeternum*" as "from eternity to eternity," but since this phrase uses the adjective *aeternus* (eternal) rather than its cognate abstract noun *aeternitas* (eternity), it is probably best given as "from everlasting to everlasting" in English. Not only was this how the expression was first translated into English in 1713 (on this translation, see below), but this rendition provides a stronger link with the wording of the Psalms in the King James Version which Newton used and to which he is evidently alluding. That Newton is translating into Latin from the English afresh, rather than simply lifting the wording from the Vulgate, is made apparent by the consistent use of *saeculum* (age) for the Hebrew 'ôlām (~[W]) in the Latin version's renditions of Psalms 41:13, 90:2 and 93:2.

³⁸Newton adds to the numerous biblical allusions in the Scholium no less than twelve direct scriptural references in the accompanying notes that were in place by the third edition, thus further setting himself apart publicly from the deists and establishing his commitment to Christian revelation.

³⁹Cf. Popkin, "Newton's Biblical Theology" (cit. n. 7), p. 93.

⁴⁰The note (b in the 1726 edition) reads as follows: "Dr. *Pocock* derives the Latin word *Deus* from the *Arabic du*, (in the oblique case *di*.) which signifies *Lord*. And in this sense Princes are called *Gods*, *Psal.* lxxxii. ver. 6. and *John* x. ver. 35. And *Moses* is called a *God* to his brother *Aaron*, and a *God* to *Pharaoh* (*Exod.* iv. ver. 16. and vii. ver. 8. And in the same sense the souls of dead Princes were formerly, by the Heathens, called *gods*, but falsely, because of their want of dominion" (Motte, *Principles*, 2:389 note a (I have corrected the misprint of Exodus 7.8 in the 1729 edition to the correct reading of Exodus 7.1); Motte-Cajori, *Principles*, 2:544 note *; Cohen-Whitman, *Principia*, p. 941 note g). By relating the term "God" to the word "Lord" in both his main text (cited above) and this added note, Newton strengthens his case for the relative quality of the term "God," since even Trinitarians would accept that the word "Lord" (used of both the One True God and humans) much more straightforwardly refers to function, as opposed to essence. The addition of this note was a daring move on the part of Newton, then in his eighty-fourth year, and it went a long way to clarifying further the meaning of the main text of the General Scholium.

of very God.”⁴¹ Indeed, without this unstated conclusion Newton’s entire exercise of contending for the relative meaning of “God” would be redundant.

In arguing that “God” is a term defined by relations, Newton specifically rejects absolute definitions of God such as “eternal,” “infinite” and “perfect.”⁴² He certainly accepts these terms as *attributes* of God and says so in the Scholium. But he is also quite clear that they are inadequate as *synonyms* for “God” because they do not express relations. Moreover, these words are problematic as fixed definitions for the term “God” in a second sense since, in the strictest sense, there can be no degrees of eternity, infinity and perfection, and hence their meanings cannot apply to beings other than the One True God—who nevertheless are sometimes called “God” in an honorary sense. For Newton this includes the person of Jesus Christ, who, although nowhere explicitly mentioned in the General Scholium, appears as an ellipsis.⁴³ Perhaps the most overt attack on the Trinity comes when Newton takes a Lockean turn, and states that while we can have ideas of God’s attributes, we do not have “any idea of the substance of God.”⁴⁴ Instead, we know God “only by his most wise and excellent contrivances of things.”⁴⁵ Newton wants to banish all metaphysical discussions about God’s nature. As we will see, his expressed agnosticism about the nature and substance of the Godhead also fits the antitrinitarian profile.

Decoding the public General Scholium with Newton’s private writings

It hardly needs saying that one reason why Newton does not express his heresy explicitly in the General Scholium is because he was writing a public document in an age in which denial of the Trinity was prohibited by law.⁴⁶ I will demonstrate equally important (albeit less immediately practical) reasons for lack of directness below, but the rich overlay of biblical language may have been meant to operate at one level as a cover for his unorthodox subtext in case of exposure. The clever arrangement and juxtaposition of scriptural texts was, after all, a ploy with a long history

⁴¹It must be stressed that Newton’s point does not relate to mere usage. Trinitarian exegetes allowed that the term “God” is occasionally used in the Old and New Testaments of human judges and kings. Instead, Newton’s tacit contention is that Trinitarians had not recognized the *implications* of this usage for how the term should be handled generally and, more specifically, how it should be used of Christ.

⁴²Motte, *Principles*, 2:389; Motte-Cajori, *Principles*, 2:544; Cohen-Whitman, *Principia*, pp. 940-1.

⁴³I suggest that one reason why Christ is not mentioned by name in the General Scholium is because it would have been extremely difficult for Newton to do so without making his antitrinitarianism obvious. Christ’s apparent absence from this document has nothing to do with any incipient Deism or supposed demotion of the Saviour in Newton’s personal Christology. First, Newton was emphatically not a Deist. Second, Christ appears directly in many of the parallels to the Scholium in Newton’s unpublished manuscripts (see below for examples). Furthermore, even in the published General Scholium, two of the biblical references given, John 10:35 (note on God) and John 14:2 (note on the theology of space), actually record the words of Christ. Both these verses appeared in the 1726 edition for the first time; John 10:35 when the note on God was added, and John 14:2 when Newton expanded the note on space (both the 1713 and 1726 versions of the note on space are given in Cohen-Whitman, *Principia*, pp. 942-3 note j).

⁴⁴I am referring here both to John Locke’s belief in the human inability to arrive at ideas of real substances (including those of spiritual beings), and his distinction between primary and secondary qualities, the latter of which bears strong similarities to Newton’s distinction between the absolute and relative. For both Locke and Newton, secondary or relative qualities are those obtained through sensation, experience or experiment. Locke’s division between primary and secondary qualities is a division between reality and appearance; the former (e.g. size, shape, hardness) are real qualities residing in the object, while the latter (e.g. colour, sound, taste) are derived from experience and are variable (see Locke, *An Essay Concerning Human Understanding*, ed. Peter H. Nidditch [Oxford: Clarendon, 1975], 1.4.18, 2.8.8-26, 2.13.18-19, 2.23.2, 4.3.11-18).

⁴⁵Motte, *Principles*, 2:391; Motte-Cajori, *Principles*, 2:546; Cohen-Whitman, *Principia*, p. 942.

⁴⁶I deal with Newton’s attempts to confine his heresy to the private sphere in Snobelen, “Isaac Newton, Heretic: The Strategies of a Nicodemite,” *British Journal for the History of Science*, 1999, 32:381-419.

among dissenters and heretics. In any event, Newton also sincerely believed that his doctrines were biblical. Despite Newton's efforts at obscuring his intent, however, it is possible to confirm the above-outlined reading of the Scholium's theology by interpreting it through the lens of more candid and explicit parallels in a series of documents—dating from before and during the period of the Scholium's composition—in which Newton discusses in a much less guarded manner themes found in this writing.⁴⁷

First, in many places in his private papers Newton uses and delimits the meaning of language that appears in the General Scholium. In the case of the title “God of Gods, and Lord of Lords,” we have clear evidence that Newton was perfectly conscious of its source, as he quotes and gives the reference for this title in his manuscripts, along with listing in addition all four of the other biblical occurrences of the shorter title “God of gods.”⁴⁸ In a manuscript dating from the same period the Scholium was drafted Newton defines the phrase “God of Gods” as referring univocally to “God the father . . . the ancient of days”—thus explicitly denying all but the most subordinationist of Trinitarian readings of this biblical expression.⁴⁹ Citing 1 Corinthians 8:5-6, Newton is quite clear that the “God of Gods,” the One God, is the Father alone, and for this reason it was wrong to “connumerate him with other Gods.”⁵⁰ Similarly, when Newton uses the Greek term παντοκράτωρ in the Scholium, we know from his manuscripts that he is referring only to the Father, and not to Christ or the Holy Spirit. This is explicitly antitrinitarian, as Trinitarians of his age contended that this title was also used of Christ. Newton believed that the One True God

is ὁ πατήρ ὁ παντοκράτωρ the father almighty in dominion, the first author of all things who bears a fatherly affection towards all his offspring, [sic] & reigns over them with an universal invincible irresistible dominion, & the Son is heir of all things & owes his father the duty of a son. The father is the ancient of days & hath life in himself originally essentially & independently from all eternity, & hath given the son to have life in himself John 5. 26. The father hath knowledge & prescience in himself & communicates knowledge & prescience to the son, Apoc. 1. 1. & 5. 3, 5, 7, 9 & Mark 13. 32.⁵¹

For Newton, there could be no doubt that the “one God the God of the Patriarchs” was none other than

⁴⁷A series of five drafts (A-E) of the General Scholium can be found in Cambridge University Library MS. Add. 3965, ff. 357-65 (see Figure 2), with partial transcriptions and translations in A. Rupert Hall and Marie Boas Hall, *Unpublished Scientific Papers of Isaac Newton* (Cambridge: Cambridge Univ. Press, 1962), pp. 348-64. Although these drafts offer some insight in variant wording and additional material, the theological material largely conforms to the final published version and is every bit as terse. The past difficulties in the decipherment of the General Scholium relate primarily to lack of access to Newton's unpublished manuscript treatises on theology and Church history. Of the manuscripts used below, the Keynes MSS were made available to scholars in the late 1940s, the Yahuda MSS in the early 1970s, the Bodmer MS in 1991 and Sotheby's Lot 255 in 2000.

⁴⁸Newton, Keynes MS 3, pp. 29, 47. The verses giving “God of Gods” are Joshua 22:22, Psalm 136:2, Daniel 2:47 and 11:36 (see Newton, Keynes MS 3, pp. 29 (where all four verses are recorded) and Keynes MS 3, p. 47 and Newton, Fondation Martin Bodmer, Geneva, MS, “Additional chapters,” f. 72v, where the Joshua, Psalms and Daniel 11:36 references are given). Both Keynes MS 3 and the Bodmer MS date from the same general period in which the General Scholium was formulated.

⁴⁹Newton, Yahuda MS 7.1k, f. 2r. Newton identifies the “God of Gods” exclusively as the Father in even greater detail in Keynes MS 3, p. 29.

⁵⁰Newton, Bodmer MS, “Additional chapters,” f. 73r.

⁵¹Newton, Bodmer MS, 1, ff. 11r-12r. On παντοκράτωρ as a term reserved exclusively for the Father, see also Newton, Bodmer MS, 1, f. 18r, 20r, Bodmer MS, 2, 43r, Bodmer MS, 3, 20r, Bodmer MS, 5A, f. 9r, Yahuda MS 15.3, f. 46v and Yahuda MS 15.5, 97r.

the father who hath life in himself & hath given the Son to have life in himself, the author of life to all intelligent beings, the Almighty (or universal ~~dominion~~ monarch) παντοκράτωρ, (that is) the supreme & ~~universal~~ governour of the Universe, the maker of heaven & earth & (of) all things therein visible & invisible.⁵²

There is no co-equality here; the General Scholium's "Being [who] governs all things" is the Person of the Father alone.

There are other such clarifications. For example, Newton's manuscripts demonstrate that he believed the Father and Son were united in power and dominion, but not in nature or essence. In one passage, he writes that his great foes in the Trinitarian homoousian party "made the father & son one God by a metaphysical unity of substance," when the Father and Son were actually "one God by a Monarchical unity, an unity of Dominion."⁵³ Newton's specifically antitrinitarian motivation behind talk of God's substance provides a revealing backdrop to his expressed denial in the Scholium that we can have "any idea of the substance of God." He goes on to argue that "the word God relates not to the metaphysical nature of God but to his dominion . . . It is a relative word & has relation to us as the servants of God." As a king and his regnant son are considered one king, so God and His Son can be called one God because of their monarchical unity, but *not* "upon account of their being consubstantial." Newton then adds, with evident acerbity, that the "heathens made all their Gods of one substance & sometimes called them one God & yet were polytheists." "Nothing," Newton concludes, "can make two persons one God but unity of dominion."⁵⁴ In his "Of the Church," which dates from the same period as the Scholium, Newton writes: "If it be said, I & the (my) father are one" [John 10:30], the homoousians "take it in a metaphysical sense for one in substance, tho Christ interprets it of a moral unity or unanimity" [John 17:21-2].⁵⁵ Shortly thereafter, he spelled out a revealing analogy to the misuse of the term "God:" "If a spiritual Being be called an Angel, they understand the word in an absolute & metaphysical sense for a Being of a certain species whereas the word is relative & moral, denoting a servant whom his Lord sends upon messages."⁵⁶ Newton had attacked such corrupt hermeneutics in an earlier manuscript: "The grand occasion of errors in the faith has been the turning of the scriptures from a moral to a (& monarchical to a physical &) metaphysical (& ~~physical~~) sense & this has been done chiefly by men bred up in the (metaphysical) theology of the heathens Philosophers . . . (the Cabbalists & (y^e) Schoolmen)."⁵⁷ Newton's argument thus serves as a gloss on the corrupt Trinitarian hermeneutics of both the fourth century and his own day, an abiding fixation in his private studies.⁵⁸ It was their mistake in taking the name "God" as a consistently absolute term denoting essence and then allowing the communication of this false and metaphysical meaning to Christ, which in turn led to the introduction of the idolatrous notion that Christ was "very God."

Elsewhere in his treatise "Of the Church," Newton states that "God is a relative word &

⁵²Newton, Keynes MS 3, p. 43.

⁵³Newton, Yahuda 15.5, f. 154r (*cf.* Newton, Yahuda 15.5, f. 98v).

⁵⁴Newton, Yahuda 15.5, f. 154r. Newton also makes the claim that linking gods metaphysically by substance is pagan in Yahuda 15.3, f. 46v. Further discussion on absolute and relative aspects of the names of God can be found in a section entitled "De nominibus Dei" in Newton's Commonplace Book (Keynes MS 2, pp. 83-4).

⁵⁵Newton, Bodmer MS, 5A, f. 8r (the square-bracketed references are my own). See also Newton, Yahuda MS 15.5, f. 97r.

⁵⁶Bodmer MS, 5A f. 8v.

⁵⁷Newton, Yahuda MS 15.5, f. 97r.

⁵⁸See for example Newton, Bodmer MS, and Newton, Jewish National and University Library, Jerusalem, Yahuda MS 15 (the latter manuscript containing drafts of the former)

signifies much the same thing with Lord, but in a higher sense. For ⟨a⟩ God & his servants are related to one another much after the same manner . . . as a Lord & his servants.” Newton then explains that it is “[i]n this sense [that] Angels who have dominion over man are called Gods in scripture.”⁵⁹ Here Newton is thinking of such examples as the Name-bearing angel of the theophany at the burning bush in Exodus 3, but it is evident that this same reasoning can be used to explain the occasional use in the Scriptures of the term God for Christ. In his “Irenicum,” Newton states that “[w]e may give the name of Gods to other Beings as is frequently done in scripture,” and goes on to write out the texts and references of biblical examples where both men and angels took on the names of God, including not only Exodus 3:2,6, but also Exodus 4:16, Exodus 7:1, Psalm 82:6 and John 10:34-5—the latter four references appearing, as we have seen, in the published General Scholium. In this manuscript Newton brings out unambiguously what is only hinted at in the Scholium: “Angels & Princes who have power & dominion over us we may call Gods but we are to have no other gods in our worship but him who in the fourth commandment is ~~called~~ said to have made the heaven & earth; which is the character of God the father.”⁶⁰ Men and angels can certainly be referred to as “Gods,” but direct worship is expressly forbidden of all but the Father, Who alone is truly God.⁶¹

More extended parallels exist as well. At several points in his papers on theology and Church history Newton writes out in nucleus material that was finally published in the General Scholium. One of the more extensive examples is found in his “Of the Church”:

If God be called ὁ παντοκράτωρ the omnipotent, they [i.e. the homoousians] take it in a metaphysical sense for Gods power creating all things out of nothing: whereas it is meant principally of his universal irresistible monarchial power ⟨to teach us obedience⟩. ffor his power of creating is mentioned in the Creed distinctly. // If the Father or Son be called God: they take the name in a metaphysical sence, [sic] as if it signified Gods metaphysical perfections of infinite eternal omniscient omnipotent: whereas it relates only to Gods dominion ⟨over us⟩ to teach us obedience. The word God is relative & signifies the same thing with Lord & King but in a higher degree. As we say my Lord o^{ur} Lord your Lord, the supreme Lord, the Lord of the earth, the King of Kings & Lord of Lords, the servants of the Lord, ? serving other Lords; so we say my God o^{ur} God, your God, the supreme God, the God of the earth the God of Gods, the servants of God, serving other Gods: but we do not say, my infinite, our infinite your infinite, the supreme infinite, the infinite of the earth, the infinite or infinites, the servants of the infinite, serving other infinites. When the Apostle told the Gentiles that the Gods whom they worshipped were not Gods, he did not mean that they were not infinites, (for the Gentiles did not take them to be such:) but he meant that they had no power & dominion over man. They were false Gods; not fals infinites but vanities falsly supposed to have power & dominion over

⁵⁹Newton, Bodmer MS, “Additional chapters,” f. 73r. Newton elsewhere writes that “Angels are called Gods” in Psalm 97:7 and Psalm 8:5 (Keynes MS 2, f. XXVIIIr).

⁶⁰Newton, Keynes MS 3, p. 47, represented as Figure 3 (*cf.* Yahuda MS 15.3, f. 46v).

⁶¹In a more technical discussion of “the signification of Θεός,” Newton distinguished between the meanings of arthrous and anarthrous *theos* when he wrote that “Ο Θεός is an individual & signifies the supreme God when limited to no other sence: Θεός is a species (as Origen & Epiphanius tell us) & ⟨may⟩ signify any divine Being wth dominion. For Elohim, Θεός, Deus, God are words of ⟨dominion & have⟩ the same signification wth ⟨the word⟩ Lord but in a higher degree” (Sotheby’s Lot 255.9, f. 2v, private collection; transcriptions from Sotheby’s 255 courtesy of J.-F. Baillon).

man.⁶²

Here material that made its way into the General Scholium is set in the broader context of a more transparent and elaborate passage that reveals both its unitarian nature and its polemical, anti-Athanasian edge. Newton specifically rejects metaphysical interpretations of God's relationship to His Son and goes on, as in the Scholium, to explain the relative nature of the term "God." Moreover, he also extends his analysis to demonstrate why the gods of the pagans are false: unlike the true God and His Son, they enjoy neither inherent nor delegated dominion. The same point is made in the added note to the third edition, when Newton comments that while the heathen called "the souls of dead Princes" gods, this was false, "because of their want of dominion."⁶³ Here there is more heresy than antitrinitarianism. In speaking of dead men's souls as false and imaginary gods, this final line of the added note summarizes two other unorthodox theological preoccupations of Newton's manuscripts, since Newton was both a mortalist (and thus denied that men's souls live between death and resurrection) and a rejecter of the literal existence of demons (evil spirits). For Newton neither disembodied souls nor demons had any real existence. It was for these reasons that the heathen idolaters called the souls of dead princes gods in vain: only a real God could have real dominion.⁶⁴

The conclusion is inescapable: Newton was lifting theological ideas from his private studies and embedding them in the General Scholium to his *Principia*, thereby cracking open a window to the world on his heresy.⁶⁵ As Frank Manuel has observed, the reiteration of these ideas "in so many other contexts in the manuscripts elevates the final affirmations of the General Scholium above the level of a *pièce de circonstance* merely incident to his tragi-comic battle with Leibniz."⁶⁶ Instead, these ideas were already an integral and central part of Newton's theology before he published the second edition of his *Principia*. However contemporaries read the document (and most saw nothing amiss), its ideas are clearly rooted in heresy. Interpreted through his more explicit private manuscripts, the intended meanings behind Newton's oblique discussions of substance and dominion in the Scholium are revealed. A Trinitarian could not have written the General Scholium.

Exegetical aids from Newton's friends and foes

Not only do Newton's manuscripts confirm that his General Scholium contained antitrinitarian reasoning, but additional corroborative evidence is provided by Newton's contemporary followers on the one hand, and his enemies on the other. Our first witness is Newton's theological disciple Samuel Clarke. Like Newton, Clarke believed that God "is a Term

⁶²Newton, Bodmer MS, 5A, f. 9r; earlier versions of this material appear in Newton, Yahuda MS 15.5, ff. 98r and 154r. For another example of Newton on the false dominion of the pagan gods, see Yahuda MS 15.4, f. 68r.

⁶³Motte, *Principles*, 2:389 note a; Motte-Cajori, *Principles*, 2:544 note *; Cohen-Whitman, *Principia*, p. 941 note g.

⁶⁴On Newton's mortalism, see Newton, "Paradoxical Questions concerning y^e morals & actions of Athanasius," William Andrews Clark Memorial Library, Los Angeles, MS, ff. 54r-55r; Yahuda MS 7.2e, f. 4v; Newton, *Correspondence of Newton* (cit. n. 8), 3:336, 339; James E. Force, "The God of Abraham and Isaac (Newton)," in *The Books of Nature and Scripture*, ed. Force and Richard H. Popkin (Dordrecht: Kluwer, 1994), pp. 179-200 (especially p. 184, where Force points to the relationship between Newton's God of dominion and his mortalism); idem, "Confronting Mortality and Immortality with Newton and Hume" (cit. n. 5), pp. 119-42. A particularly striking example of Newton's denial of the existence of evil spirits occurs in Newton, Yahuda MS 9.2, ff. 19v-21v. See also Snobelen, "Isaac Newton, Heretic" (cit. n. 46), pp. 387, 388.

⁶⁵Westfall was not quite right, therefore, to conclude that Newton did not publish antitrinitarian theology and that he "kept the unorthodox aspects of his religion to himself" (Westfall, *Newton* (cit. n. 7), pp. 653, 828).

⁶⁶Manuel, *Religion of Newton* (cit. n. 7), p. 21.

expressing Dominion,”⁶⁷ writing that it is “*Dominion and Authority*; which alone is that which makes God to be *God*, (in the *moral* or *religious* Sense of the Word,) ὁ παντοκράτωρ, *Supreme over all* . . . ’Tis *Dominion* only, that makes God to be *God* to us; and therefore the Scripture so frequently uses the Word παντοκράτωρ, *Supreme over all*, as equivalent to the Title, *God*.”⁶⁸ In his 1712 *Scripture-Doctrine*, he expresses explicitly a conclusion that is only implied in the General Scholium:

The reason why the *Son* in the New Testament is sometimes stiled *God*, is not so much upon Account of his *metaphysical Substance*, how Divine soever; as of his *relative Attributes* and divine *Authority* over us.⁶⁹

Clarke also employed the same linguistic argumentation as Newton to show that God was a relative term. In responding to Francis Gastrell, who correctly perceived that Clarke’s theology rendered the term God “a Word of *Office* only, as *Master* and *King* is,” and that it “signifies something distinct from the *Divine Nature*,” Clarke wrote:

That the Word *God* in Scripture, is indeed always a relative Word of *Office*, signifying personal *Dominion*, *Dignity*, or *Government*; is evident from hence; that in like manner as we say, *My Master*, *My Father*, *My King*, and the like; so the Scripture teaches us to say also, *MY God*, *The God of Israel*, and the like: Whereas on the other Side we cannot say, *My Divine Nature*, the *Divine Nature of Israel*, or the like.⁷⁰

Agreeing with Newton that only the Father was properly God, Clarke argued in print for this position, writing that “[t]he *Father* (or *First Person*) is, absolutely speaking, the *God of the Universe*; the *God of Abraham, Isaac and Jacob*; the *God of Israel*; of *Moses*, of the *Prophets* and *Apostles*; and the *God and Father of our Lord Jesus Christ*,” and that “[t]he Scripture, when it mentions the *One God*, or the *Only God*, always means the *Supreme Person of the Father*.”⁷¹ Marshalling evidence from Scripture and the early Fathers, Clarke also asserts that the παντοκράτωρ is the Father alone.⁷² Furthermore, he comes to the same conclusion as Newton on the unity of the Father and Son, arguing that their’s is not a unity of substance, but one of monarchy: the Son acts as vicegerent for the Father.⁷³

We now come to Whiston, whose views on the Godhead were, like Clarke’s, almost indistinguishable from those of Newton, only much more vocally expressed. As with Clarke, too many examples of parallels exist to list conveniently here. Four examples from a publication that appeared shortly before the second edition of the *Principia* will serve as illustrations. First, Whiston presented a similar argument to Newton on the communicability of the divine names and titles, writing in 1711 that

⁶⁷Clarke, *Observations on Dr. Waterland’s Second Defence of his Queries* (1724), in *The Works of Samuel Clarke, D.D.*, 4 vols. (London, 1738), 4:499.

⁶⁸Clarke, *Dr. Clarke’s Answer to the Remarks of the Author of, Some Considerations concerning the Trinity, and the Ways of Managing That Controversy*, in *Works* (cit. n. 67), 4:355.

⁶⁹Clarke, *Scripture-Doctrine* (cit. n. 6), pp. 296.

⁷⁰Clarke, *Dr. Clarke’s Answer*, in *Works* (cit. n. 67), 4:352. Gastrell, who had delivered the Boyle Lectures in 1697, was at the time Bishop of Chester.

⁷¹Clarke, *Scripture-Doctrine* (cit. n. 6), pp. 244-5.

⁷²Clarke, *Scripture-Doctrine* (cit. n. 6), pp. 62-4.

⁷³Clarke, *Scripture-Doctrine* (cit. n. 6), pp. 332-3. Soon after the publication of the General Scholium, Clarke’s friend John Jackson ascertained the common cause of Newton and Clarke, writing to the latter: “About a year agoe I consulted the Scholium of S^r Isaac Newton’s Princip: Mathemat: concerning the true Notion of God, and found it exactly agreeable to your Scripture Doctrine” (Jackson to Clarke, 30 January 1716, Cambridge University Library (hereafter CUL) MS. Add. 7113/18).

the *Name Jehovah* no way relates to the Substance of God; and is one of the most communicable, as to the Son, of all the rest; and while its Communication to him no more implies any such Equality or Sameness, than the Communication of other of God's Names to Angels, to *Moses*, to Magistrates, or the like, implies, that all those Beings are in some sort equal to, and consubstantial with him also. And the Reader is to suppose the same Observation, as to other of the Names of God also.⁷⁴

For Whiston, like Newton, the title “God of Gods” refers specifically and uniquely to the Father.⁷⁵ Whiston also expressed himself similarly to his mentor on the biblical term παντοκράτωρ.⁷⁶ Finally, Whiston's own analysis of the distinction between true Gods and false gods bears a remarkable resemblance to that of the General Scholium.⁷⁷ Published examples like these from Clarke and Whiston—known heretics and disciples of Newton—would have gone long way to acting as exegetical aids to the reading of the General Scholium. But the next example may have offered the most transparent clue.

From the very moment it was published, Whiston recognized the antitrinitarian nature of the General Scholium and that it expressed theological notions dear to his own heart. So quick was Whiston to see the apologetic value of the document, that he produced a translation of the theological portion of the General Scholium within *days* of its release, publishing it shortly thereafter as an appendix to a work that attacked the Athanasian doctrine of the Trinity. If the location of the translation within an antitrinitarian work was not enough to reveal Whiston's understanding of the General Scholium, his own prefatory remarks offer more than a hint of this. Newton, Whiston wrote, was giving the world in the Scholium “his most serious and inmost Thoughts” regarding “God himself, and his Unity, Supremacy, Dominion, and other Attributes,” along with “the proper Scripture Acceptation of the Word *God*, when apply'd to any other than the Supreme Being himself.”⁷⁸ Coming from Whiston, who was at the time being prosecuted for denying the Trinity, these words could only have had one meaning. The appendix is dated 6 July 1713: Whiston thus had produced the translation within as little as four or five days of receiving the second edition of the *Principia* from Cotes.⁷⁹ Whiston went on to republish this translation in the two editions of his *Astronomical Principles of Religion*.⁸⁰ This was not all. When Henry Pemberton failed to epitomize the General Scholium in his *View of Newton's Philosophy* (1728), Whiston compensated for the loss by publishing a sixteen-page addendum containing a revised translation of the General Scholium, along with theological material from Newton's *Opticks* and the recently-published *Chronology*. This quarto booklet was meant to be bound with copies of

⁷⁴Whiston, *An Account of the Convocations' Proceedings with Relation to Mr. Whiston* (London, 1711), pp. 71-2.

⁷⁵Whiston, *An Account of the Convocations' Proceedings* (cit. n. 74), p. 79; cf. idem, *Primitive Christianity Reviv'd*, vol. V (London, 1712), p. xxiii.

⁷⁶Whiston, *An Account of the Convocations' Proceedings* (cit. n. 74), pp. 106-7.

⁷⁷Whiston, *An Account of the Convocations' Proceedings* (cit. n. 74), pp. 107-8.

⁷⁸Whiston, *Three Essays. I. The Council of Nice Vindicated from the Athanasian Heresy. II. A Collection of Ancient Monuments Relating to the Trinity and Incarnation, and to the History of the Fourth Century of the Church. III. The Liturgy of the Church of England Reduc'd Nearer to the Primitive Standard* (London, 1713), pp. 29-31 (Appendix to Part I). Whiston appears to have added this appendix to unsold copies of his *Council of Nice Vindicated*, which is dated 31 May 1713. This may explain why many copies of this work want the appendix, which is almost certainly the first English translation from the General Scholium.

⁷⁹Whiston received his unbound copy of the new edition in the final days of June or the first days of July, possibly before Newton himself (Bentley to Newton, [30 June 1713], *Correspondence of Newton* (cit. n. 8), 5:413-14).

⁸⁰Whiston, *Astronomical principles of religion* (1717) (cit. n. 12), pp. 237-40 (2nd ed. 1725).

Pemberton's emasculated work and was advertised as such.⁸¹ An octavo format edition was published the following year.⁸²

Some of the more perceptive enemies of heresy were no less astute in recognizing the difference between the God of essence and the God of dominion. William Stephens, in a sermon on the eternal generation of the Son, spoke of those, who, while "they do not Deny that the Father and Son are *one* God, yet have plac'd this Unity of the Godhead, not, (as it ought to have been) in an Unity of *Substance*; but, in an Unity of *Monarchy* and *Government*; and make the Trinity of Persons to be no otherwise one God, than as they are joint Possessors of the one *Authority* and *Dominion* of the Universe."⁸³ Stephens affirms that the fourth-century orthodox defenders of the Nicene faith laboured to show "that the Word *God* is not a Name of *Office* and *Authority*, but of *Being* and *Substance*; that is does not denote *Ruler*, *Governour*, and the *like*; but a *Nature* and *Essence*, *Infinite*, *Eternal*, and *Divine*, in that Person of whom it is prædicated."⁸⁴ Similarly, Newton's above-cited "moral" interpretation of John 10:30, can be contrasted with that of an anonymous Trinitarian author who, in 1714, wrote that this same passage teaches that God and Christ are "*One* in Nature, Essence and Power."⁸⁵ Another contemporary observer not only specifically identified the language of the General Scholium as antitrinitarian, but recognized that it paralleled the arguments of Clarke's *Scripture-Doctrine*. Manuscript notes written on one of the concluding flyleaves of a copy the second edition of the *Principia* conclude that the Scholium

seems design'd to give Countenance to D^r. Clarke's Scheme. That Gentleman makes the Word God to be only a Relative Term. He tells us, it is never intended to signify the Divine Nature, or the abstract metaphysical Attributes of God, but only his Attributes relative to Us, as his Dominion, Authority &c. It is one of his

⁸¹Whiston, *Sir Isaac Newton's Corollaries from His Philosophy and Chronology, in His Own Words* (London, 1728); *Daily Post*, 29 April 1728.

⁸²Whiston was not the only one to produce an English translation of the General Scholium during this period. John Maxwell, an engraver associated with Whiston's publisher John Senex and an evident sympathiser with Clarke's doctrine, published a complete translation in 1715 (*A Discourse concerning God; wherein the Meaning of His Name, His Providence, the Nature and Measure of His Dominion Are Consider'd; with Some Remarks upon the Rights of the Creatures, and the Doctrine of Absolute Reprobation. To which Is Subjoin'd a Translation of Sir Isaac Newton's General Scholium at the End of the Second Edition of his Principia concerning the Cartesian Vortices, and concerning God; as also a Short Account of the Cape of Good Hope* [London, 1715], pp. 98-106; see also Larry Stewart, *The Rise of Public Science: Rhetoric, Technology, and Natural Philosophy in Newtonian Britain, 1660-1750* [Cambridge: Cambridge Univ. Press, 1992], pp. 187-8). Maxwell's now rare translation received much wider coverage in the publication of most of the theological portion at the foot of a new edition of Whiston's broadsheet, the *Scheme of the Solar System (Mr. Whiston's Scheme of the Solar System Epitomis'd. To w^{ch}. Is Annex'd a Translation of Part of y^e General Scholium at y^e End of y^e Second Edition of Sr. Isaac Newton's Principia. Concerning God* [London, c.1721] (see Figure 4). The material cited commences with Newton's discussion of beauty and design in the solar system, which provides an obvious linkage with Whiston's engraving of the orbital paths of planets and comets. That the cited portion also includes Newton's discussion of the meaning of "God," shows that Whiston or perhaps Maxwell himself as perfectly natural the juxtaposition of the theology of the General Scholium with an image showing the divine harmony and unity of the solar system. Furthermore, a free translation of portions of the General Scholium, along with excerpts from Maxwell's treatise, was published in the article on "God" in Ephraim Chambers' *Cyclopædia; or, an University Dictionary of the Arts and Sciences* (London, 1728). This use of the General Scholium was recently brought to the attention of scholars by James Force in his "Newton, the Lord God of Israel and Knowledge of Nature" (cit. n. 5), pp. 149-50.

⁸³Stephens, *The Divine Persons One God by an Unity of Nature* (Oxford, 1722), p. 4.

⁸⁴Stephens, *The Divine Persons* (cit. n. 83), p. 5.

⁸⁵*The Equality of the Son and the Holy Ghost with the Father, in the Ever-Blessed Trinity* (London, 1714), sig. A3v.

chief Positions, That the Son is stiled God, not upon the Account of his Substance or Essence, how divine soever; but because of his Authority over us.⁸⁶

It is instructive that the author of these observations had no trouble perceiving the implications of Newton and Clarke's analysis for the Deity of Christ. Thus, some of Newton's more theologically-astute contemporaries saw through the obscure language of the Scholium to identify its intent, providing yet one more way of verifying the antitrinitarian nature of the Scholium.⁸⁷ Some—including both Newton's supporters and enemies—did indeed recognize the covert assault on the Trinity in the General Scholium.⁸⁸ In the next section, I will focus on one particularly illuminating example.

Socinianism in the Scholium

Thus far I have shown that Newton's private manuscripts contain unambiguous antitrinitarian theology and that the same ideas (albeit in more oblique form) made their way into the General Scholium, thus demonstrating that this document contains antitrinitarian argumentation. The evidence behind this syllogism, and the conclusion itself, I take to be overwhelming and incontrovertible. But I believe it is possible to be even more specific. The theology presented in the Scholium is certainly compatible with Arianism—which taught a Supreme High God and a lesser created god Christ—and we know from his manuscripts that the Christology at which Newton arrived closely resembled this fourth-century doctrinal position. But there is evidence that Newton appropriated ideas from another non-Trinitarian doctrinal tradition as well. Our first clue comes from the pen of the fiery Calvinist divine John Edwards. In a postscript to a 1714 work against Clarke, Edwards not only accused Newton in print of attacking the Trinity in the General Scholium, but also raised the spectre of Socinianism.⁸⁹ Edwards was an old war horse

⁸⁶Annotations at the end of the second edition of the *Principia*, University of Toronto (SCI 1713 ed., copy 1). In making the above points, the annotator refers to page 296 of Clarke's *Scripture-Doctrine*, a portion of which is cited above. These annotations were first brought to light in 1996 by Larry Stewart, who suggests that the annotator was Trinity College Fellow James Paine who, as a note to the annotations reveals, had in turn taken the comments from a 1720 work by John Cumming (see Stewart, "Seeing through the Scholium" (cit. n. 6), pp. 134-8).

⁸⁷Another noteworthy example of this can be found in a clever letter written to Henry Pemberton and published in the 20 May 1731 issue of the *Grub-Street Journal*. The anonymous author provides an English translation of the most heavily theological section of the General Scholium and entitles it "*The NEWTONIAN CREED.*" In a probing prefatory appeal, the writer asks Pemberton (who, as already mentioned, chose to omit the General Scholium from his *View*) "to explain by a short comment, the meaning of the following *Creed*; which, it is imagined, was written by Sir ISAAC NEWTON, in imitation of S. ATHANASIUS's *Creed*, to convince the world, that his Religion was as much above that of the vulgar, as his Philosophy." The translation given is that of Whiston, likely taken from his *Corollaries* of 1728 or 1729 (the publication of which by the heretic Whiston may also have provided a pivotal clue to this writer as to the General Scholium's meaning). This example from the *Grub-Street Journal*, along with Andrew Motte's translation of 1729, brings to ten the number of English translations from the General Scholium published between 1713 and 1731 (six of which were by Whiston).

⁸⁸It would be pointless for me to go over in detail ground already handled in a masterful way by Stewart, who was the first to provide conclusive evidence for what I want to argue was a successful (albeit minority) reading of the General Scholium. I therefore refer the reader to his "Seeing through the Scholium" (cit. n. 6) and "Samuel Clarke" (cit. n. 6).

⁸⁹The Socinians (or Polish Brethren) were a biblicist, antitrinitarian movement of the sixteenth- and seventeenth-century Radical Reformation. They were viewed in Newton's time as even more radical than the Arians. See *The Polish Brethren*, ed. G.H. Williams (Missoula: Scholars Press, 1980) and G.H. Williams, *The Radical Reformation*, 3rd ed. (Kirkville: Sixteenth Century Journal, 1992). Here it is also worth noting that Leibniz, too, did not shrink back from accusing Newton of Socinianism—even if he did so on an incorrect assumption (*A Collection of Papers* (cit. n. 16), p. 31). An earlier and briefer presentation of the case for Socinian content in the General Scholium can be found in Snobelen, "Isaac Newton, Heretic" (cit. n. 46), pp. 406-7.

who had long fought the infiltration of Socinian heresy into England, and it is true that he was not coy about throwing out slanderous labels. But Edwards also knew his Socinianism well and added substance to his charge by contending that Newton's linguistic arguments about God in the General Scholium, like those in Clarke's *Scripture-Doctrine*, had been taken straight from the thirteenth chapter of the Socinian Johann Crell's *De Deo et ejus attributis* (*Concerning God and his attributes*).⁹⁰ No one has yet followed through with the implications of this allegation; I want to argue that we must take it seriously.

We have already seen how Newton dissented from the Trinitarian view that the term God is absolute and refers to essence, arguing instead that the word is relative and has reference to dominion. Crell makes the very same point in chapter thirteen of his *De Deo*, where he writes: because the term God . . . is fond of . . . additional clause[s] . . . which relation is signified to the others, as when God is said to be God of this or that . . . it is easily understood, that that term is neither by nature particular, nor does it signify God's essence itself . . . Why therefore is God so frequently called God of these or those? Certainly because *the term God is principally a name of power and empire*.⁹¹

This is *precisely* the position Newton articulates in the General Scholium. The characterization of God as a relative word is, as Edwards noted, expounded upon in chapter thirteen of Crell's *De Deo*.⁹² And, as Edwards implied, so is the God of dominion.⁹³ He also observes that Newton shares his usage of the epithet "Supreme God" (*Deus summus*) in the General Scholium with not only the Arians but also the Socinians, both of whom need to employ the qualification *summus* "to distinguish the Father from the Son, who they hold to be an *Inferior* God".⁹⁴ But the parallels with Socinian theology extend even further than Edwards himself insinuates. Crell discusses the relative nature of God's names and titles by showing, like Newton, how commonly God is called the God of "this or that," stating that "God alone . . . is said to be 'powerful one,' because He has empire alone by himself, and indeed over all things, and whoever has power (by himself, that is), has it either by His gift, or at least by His permission."⁹⁵ In language highly reminiscent of Newton, Crell explains that this term "pertains first to loftiness, then to breadth of the same

⁹⁰Edwards, *Some Brief Critical Remarks on Dr. Clarke's Last Papers* (London, 1714), pp. 36-7. Later in the Postscript Edwards charges that Newton's arguments in the General Scholium mirror not only those of Clarke, but those of Whiston as well (p. 40).

⁹¹Crell, *De Deo et ejus attributis* (n.p.p. 1631), col. 100 (quotations from Crell translated from Latin). Chapter thirteen is entitled "*De nomine θεός*" ("Concerning the name God"). The portion cited by Edwards is italicized.

⁹²Crell, *De Deo* (cit. n. 91), cols. 89-102.

⁹³Crell, *De Deo* (cit. n. 91) cols. 101-2; see also chapter 23, *De Potestate Dei* ("Concerning the Power of God"), cols. 161-91. Edwards goes on to argue against the deficiencies of "dominion" as a definition for the Deity, both putting forward terms such as "goodness," "holiness," "mercifulness" and "benignity" as more appropriate and contending that "dominion" could not hold for all time, since "God had not Dominion, when there were none to have Dominion over." He also attempts to expose another potential weakness in Newton's argument by claiming that if "*Dominion makes a God*," then the term (with its despotic connotations in Classical usage) was more apt for "*the God of this World*," that is to say, Satan (Edwards, *Some Brief Critical Remarks* (cit. n. 90), pp. 39, 40). By this point in his life, however, Newton had come to reject a literal devil, possibly in part because of the logic of his views on God's dominion (see my "Lust, Pride and Ambition: Isaac Newton on the Devil," forthcoming).

⁹⁴Edwards, *Some Brief Critical Remarks* (cit. n. 90), pp. 39. Newton uses the title *Deus summus* three times in the General Scholium (with the third example in the material added in 1726 to the note on space) (Motte, *Principles*, 2:389-90, 390 note b; Motte-Cajori, *Principles*, 2:544-45, 545 note *; Cohen-Whitman, *Principia*, pp. 940, 942, 942 note j). As Edwards implies, it is not only the simple deployment of this seemingly innocent term, but the intent behind the usage that is crucial.

⁹⁵Crell, *De Deo* (cit. n. 91), cols. 173-4.

empire, because he is King of kings, Lord of the dominant, Lord of hosts, God of gods, and finally God and head of Christ himself.”⁹⁶ Crell’s final point here is crucial. Both he and Newton want to show that only the Father is supremely and uniquely God, and that He is Himself God of Christ—the principal antitrinitarian conclusion intended by the argument from the relative nature of God’s titles.

The additional note that Newton added to the General Scholium in 1726 points out that “Princes are called *Gods*, *Psal.* lxxxii. ver. 6. and *John* x. ver. 35. And *Moses* is called a *God* to his brother *Aaron*, and a *God* to *Pharaoh* (*Exod.* iv. ver. 16. and vii. ver. 1).”⁹⁷ This otherwise inexplicable notion that persons other than the supreme God can be called “God” is also another standard Socinian position that is presented in the very chapter of Crell’s *De Deo* identified by Edwards.⁹⁸ Moreover, three of the four proof texts Newton employed to support the argument are also found in exactly this same chapter.⁹⁹ Furthermore, the argument about false gods and idolatry is also virtually identical to what we find in another of Crell’s writings.¹⁰⁰ Thus, even after being accused of Socinianism, Newton added to the third edition of the General Scholium further ideas that resemble Socinian teachings. These parallels are too close for this to be a coincidence.¹⁰¹ Nor does the fact that Newton does not appear to have possessed a copy of Crell’s *De Deo* argue against this. His close friend and neighbour Samuel Clarke had at least one copy of the *Bibliotheca Fratrum Polonorum*, which included the work.¹⁰² Even without Crell’s *De Deo*, both the theological reasoning and the constellation of biblical texts are all Socinian *topoi* typical of their hermeneutical profile.¹⁰³ Edwards was right: there is Socinianism in the General Scholium.¹⁰⁴

Other evidence helps confirm what Edwards suspected. Newton began no later than 1690

⁹⁶Crell, *De Deo* (cit. n. 91), cols. 174.

⁹⁷Motte, *Principles*, 2:389 note a (with Exodus 7.8 in the 1729 edition once again corrected to Exodus 7.1); Motte-Cajori, *Principles*, 2:544 note *; Cohen-Whitman, *Principia*, p. 941 note g; cf. Newton, Keynes MS 3, p. 45r; Bodmer MS, 5B, f. 8r.

⁹⁸Crell, *De Deo* (cit. n. 91), cols. 94-9.

⁹⁹Crell, *De Deo* (cit. n. 91), cols. 94-6, 99.

¹⁰⁰Crell, *The Two Books of John Crellius Francus, touching One God the Father* (Kosmoberg [London], 1665), p. 5.

¹⁰¹Without specifically mentioning the General Scholium, other perceptive theological writers, such as William Stephens, also recognized that these arguments, first presented by the Arians in the fourth century, had been more recently revived by the Socinians (Stephens, *The Divine Persons* (cit. n. 83), p. 5). In fact, it is much more likely that Stephens had been exposed to these teachings directly or indirectly through contemporary Socinian and Unitarian writers (or their detractors), than by reading the more limited Arian corpus.

¹⁰²See Snobelen, “The Library of Samuel Clarke,” *Enlightenment and Dissent*, 1997, 16:185-197.

¹⁰³The argument for the relativity of the term “God” based on the use of this word for judges, kings and angels was, for example, paradigmatic of Socinian apologetics (cf. *The Polish Brethren*, ed. Williams (cit. n. 89), pp. 316, 392-3, 398, 560; *The Racovian Catechism*, trans. Thomas Rees (London, 1818), pp. 29, 34, 57, 151, 196; Stanisław Lubieniecki, *History of the Polish Reformation*, ed. G.H. Williams (Minneapolis: Fortress, 1995), p. 163; Paul Best, *Mysteries Discovered* (London, 1647), pp. 4-6 (Best was an English Socinian convert); Johann Crell, *One God the Father* (cit. n. 100), pp. 13-22, 190, 214, 222). Likewise, all of the verses Newton cites in his note on God were standardly deployed as proof texts by antitrinitarian apologists of the period, and were used much more frequently by them than by their Trinitarian counterparts (cf. Lubieniecki, *History of the Polish Reformation*, pp. 161-5; *The Polish Brethren*, ed. Williams (cit. n. 89), p. 104).

¹⁰⁴This is not to say that it was Newton’s primary intention to present Socinianism in the *Principia*, nor that Newton himself was a Socinian (unlike the Socinians, he held to the premundane of Christ), only that he used—along with his own innovation—the sophisticated tools of Socinian exegesis to further his broader goals for the General Scholium.

an engagement with Socinian theology that was to last for the rest of his life.¹⁰⁵ The Socinians were the leading and most intellectual antitrinitarian movement of the seventeenth century, and it is thus not surprising to find that Newton exhibited an interest in their views. In 1689 Newton began a series of theological exchanges with John Locke, whose intense interest in Socinianism is established and whose collection of *Sociniana*—totalling no less than forty-three works—is remarkable for its size and scope. He also had access to the excellent collection of Socinian works held at Trinity College.¹⁰⁶ Newton himself owned at least eight Socinian books, along with another three Socinian-influenced titles by Transylvanian Unitarian György Enyédi, German Arian Christopher Sand and English Unitarian John Biddle.¹⁰⁷ As late as 1726 Newton both met with and patronized the communicant Polish Brother Samuel Crell. And parallels with Socinian theology abound in Newton’s private manuscripts. Newton’s interest in Socinianism thus may not have been limited to appropriating attractive antitrinitarian argumentation. Socinianism was a full doctrinal system and other distinctive and often unorthodox theological beliefs formed an integral part of the theological rationale, including mortalism, the denial of the eternity of hell fire, believers’ baptism, the separation of church and state, irenicism and the advocacy of religious toleration. All these elements occur in Newton’s thought. Further stunning analogies with Socinianism exist in Newton’s view of Church history, his antitrinitarian textual criticism and his scriptural hermeneutics. None of this proves that Newton derived his thoughts on every one of these teachings directly from Socinian texts, as opposed to independent study. What is certain is that no other Christian doctrinal tradition—including Arianism—more closely matched Newton’s whole belief system. Put another way, Newton and the Socinians shared a common theological ethos.

I present this additional background detail because I am aware some may be reticent to accept the claim that Socinian (or, even more generally, antitrinitarian) hermeneutics underpin the General Scholium, and that they do so in a deliberate way. It will thus be important to examine the alternatives. One option, to argue that Newton was not an antitrinitarian at all, is no longer tenable with the availability of the private manuscripts.¹⁰⁸ In any case, Newton was an astute theologian and would hardly have dared to present ideas he knew would be taken as antitrinitarian if he was not thoroughly committed to them. Another possibility is that he was so used to thinking in non-Trinitarian modes of thought, that he was actually not conscious that he had presented unorthodox theology in this public document. There are a number of serious difficulties with this proposal. First, the fastidious Newton, who characteristically wrote out draft after draft of his writings in order to get his wording just right, was not prone to verbal slips. The five surviving drafts of the General Scholium show that this document was no exception. He was also well aware of the dangers of articulating heresy openly. That much is made clear by his life-long Nicodemite stance. Furthermore, the deliberateness of Newton’s writing is underscored by

¹⁰⁵Sources and further detail on this can be found in Snobelen, “Isaac Newton, Heretic” (cit. n. 46), pp. 383-89.

¹⁰⁶Snobelen, “Isaac Newton, Heretic” (cit. n. 46), p. 385). Through the 1660s and perhaps as late as the early 1670s, this library was situated above Newton’s rooms (see Lord Adrian, “Newton’s Rooms in Trinity,” *Notes and Records of the Royal Society of London*, 1963, 18:17-24 and *A Perspective View of y^e Great Court of Trinity College in Cambridge* (1740), which shows the location of the old library).

¹⁰⁷Simple ownership of books does not, of course, necessarily imply assent with their contents on the part of the owner, as many orthodox divines also possessed Socinian works. Newton’s status as an antitrinitarian, coupled with the parallels between Socinian theology and his own, however, strongly indicate that Newton’s ownership of such works would have been of a entirely different order than that of the orthodox.

¹⁰⁸This has not stopped Thomas J. Pfizenmaier from recently attempting to do this very thing (Pfizenmaier, “Was Isaac Newton an Arian?” *Journal of the History of Ideas*, 1997, 58:57-80).

his addition of an antitrinitarian note to the 1726 edition, even after the document's Socinianesque language had been exposed by Edwards. I take the strongest alternative explanation to be the possibility that there is not a shred of Socinianism (strictly construed) in the Scholium, but that the antitrinitarian ideas expressed therein are informed by Arianism—nothing more, nothing less. While it is certainly true that it is not always easy to distinguish between Arian and Socinian apologetics, there stands against this possibility at least four objections. First, Newton owned and read Socinian books, and was thus familiar with their theology. Second, closer parallels with at least some of the ideas in the Scholium (such as the relativity of the term “God”) are to be found in Socinian writings of the seventeenth-century, than in the Arian treatises of the fourth. Third, it was possible for a well-informed contemporary theologian like Edwards to identify Socinian content. Fourth, leading historian of Arianism Maurice Wiles has concluded that Newton's Christology is a mixture of both Arian and Socinian strands.¹⁰⁹ Finally, one could argue that it is possible that the analogies with Socinianism are purely coincidental and derive *exclusively* from Newton's own considerable independent theological research. But even if this long shot were true (Newton believed in a vacuum, but did not live in one), what appreciable difference would there be between what is (and what was seen to be) at least *functionally* Socinian, if not also genetically so? The argumentation in this case would occupy a place theologically equivalent to Socinianism, this theology would in turn continue to be unequivocally antitrinitarian and we still come back to the original conclusion: the General Scholium to Newton's *Principia* is a heretical document through and through.

Natural philosophy, theology and the “flow of influence”

It is one thing to discuss the character of the theology of the concluding appendix to Newton's greatest work on natural philosophy, but quite another to demonstrate linkages between this distinctive theology and his natural philosophy. Scholars of Newton in the past have considered a range of possibilities: that Newton kept his natural philosophy and theology separate, that “influence” flowed primarily from his natural philosophy to his theology, that the reverse dynamic was mostly true, that cross-fertilization occurred or that both Newton's theology and natural philosophy were part of a broader, common project.¹¹⁰ Richard Westfall opted for the

¹⁰⁹Wiles, *Archetypal Heresy: Arianism through the Centuries* (Oxford: Oxford Univ. Press, 1996), pp. 83-4. The fact that analogies to Socinian thought can also be found in the writings of Clarke and Whiston, as Edwards correctly observed, does not militate against the conclusion that Newton was informed by Socinian as well as Arian theology. Although both Clarke and Whiston were known as Arians, neither were so in the classical sense. Moreover, with allowances for some independent thought, both men had gone through their heretical catechumenates at the feet of Newton himself, whose engagement with Socinianism had begun long before. In the case of Clarke, the theological contact continued for the rest of Newton's life (Snobelen, “Isaac Newton, Heretic” (cit. n. 46), pp. 383-9, 402-3 and idem, “Caution, conscience and the Newtonian reformation: the public and private heresies of Newton, Clarke and Whiston,” *Enlightenment and Dissent*, 1997, 16:151-84). Although both Clarke and Whiston publicly attacked Socinianism and, like Newton, were not Socinian in the Christological sense, this would not prevent them from appropriating Socinian arguments (consciously or not). Finally, in this regard, it is not incidental that Clarke almost certainly owned the complete works of the Socinians (see n. 102 above).

¹¹⁰It is reasonable to question whether it makes sense to speak of *influence* at all when considering a period in which natural philosophy and theology (in its broadest sense) were often so closely related (on this, see Cunningham, “How the *Principia* Got Its Name” (cit. n. 14), p. 382). As Margaret J. Osler has recently shown, the conflict, harmony and segregationist metaphors used in the historiography of science and religion tend to presume an essentialist view of natural philosophy and theology, as if these two fields were somehow autonomous entities not prone to change over time when the boundaries were in fact porous and shifting. Instead, Osler articulates a more flexible metaphor of “appropriation-and-translation” in which “natural philosophers sometimes appropriate ideas developed in religion or theology, translate them into the language of natural philosophy, and use them to solve

second scenario and, after stating that he was not convinced that Newton's theology had made any significant impact on his natural philosophy, wrote that "we are more likely to find the flow of influence moving from science, the rising enterprise, toward theology, the old and (as we know from hindsight) fading one."¹¹¹ Newton, of course, did not enjoy the advantage of this present-centred hindsight. In another place, Westfall reiterates his claim that Newton's theology did not influence his natural philosophy, but distinguishing between "religion" and "theology," concedes that "[t]he influence of his religion on his science is, I believe, universally admitted, and I do not challenge that conclusion." But he goes on to say:

His theology, by which I mean explicitly his Arianism and the associated interpretation of the prophecies, is another matter. Perhaps we can find echoes of the Arian God in the Pantocrator of the "General Scholium," but this leaves us still on such a high level of generality that it tells us very little. If we want to descend to the details of Newton's science, as it is found in the *Principia* and the *Opticks*, I am unable to trace any line of influence that has substance.¹¹²

It is surprising that a scholar who had such an intimate knowledge of Newton's theological manuscripts could arrive at such an conclusion. With the theology of the Scholium further clarified by Newton's private papers, along with the added evidence of affinities with Socinianism,¹¹³ all of which provides a more precise understanding of the theology of the General Scholium, we are prepared to revisit Westfall's conclusion.

Taking Westfall's division between "religion" and "theology" to refer to a distinction between the widely-held natural philosophical commitments and devotion to the study of Nature on the one hand, and that of dogmatic theology (both generally biblicist and specifically unitarian) on the other, our present concern is mainly with the latter. While it may make less sense to speak of natural theology impacting natural philosophy at a time when natural theological presuppositions were already integral to both the concepts and culture of natural philosophy, the further we depart from natural theology in the direction of theology proper, and especially when we arrive at highly unconventional theology, the more it becomes justifiable to prioritize the impact of the one field upon the other. The difference here is between internal coexisting dynamics that are (and are almost always) part of the same mix, and external, variable and independently existing ideas that have the potential to be used to shape in distinctive ways from the outside. In discussing the ways in which Newton's distinctive theology related to his natural philosophy, I want to contend not merely for the weak argument of similarity of style and coincidence of method, but also for the strong argument that interpenetration existed at a

problems in the new context." This model stresses "continuity of meaning at a deep level" (Osler, "Mixing Metaphors: Science and Religion or Natural Philosophy and Theology in Early Modern Europe," *History of Science*, 1998, 36:91-113, citations from pp. 101, 102; for general background, see also John H. Brooke, *Science and Religion: Some Historical Perspectives* (Cambridge: Cambridge Univ. Press, 1991), pp. 16-51). The "appropriate-and-translation" model comes close to encapsulating Newton's own enterprise, although the harmony metaphor also has merit in this case and was, as Osler points out, one with which Newton himself would have been sympathetic (p. 106).

¹¹¹Westfall, "Newton's Theological Manuscripts," in *Contemporary Newtonian Research*, ed. Z. Bechler (Dordrecht: Reidel, 1982), pp. 129-43, on p. 140. Force argues (correctly, in my view) against Westfall's stated position in his "Newton's God of Dominion" (cit. n. 5).

¹¹²Westfall, "Newton and Christianity," in *Facets of Faith and Science. Volume 3: The Role of Beliefs in the Natural Sciences. The Pascal Centre*, ed. J.M. van der Meer (Ancaster, Ontario: The Pascal Centre/ Lanham: The Univ. Press of America, 1996), pp. 63-74, on p. 72.

¹¹³Westfall did not seek to explore contact between Newton's thought and contemporary radical theology, and this remains one of the chief defects of his work on Newton's theology.

fundamental level between the cognitive *content* of the theological and natural philosophical features of Newton's grand study.¹¹⁴ That his theology should sometimes inform his natural philosophy should not strike us, *a priori*, as a surprising dynamic for an age in which studies of God's Word and Works had not yet bifurcated to the extent they would in later years.¹¹⁵ Newton moves freely between areas of thought we today would label and demarcate as religious, philosophical and scientific. Still, it is always easier to give assent to the *plausibility* of interaction than to demonstrate it conclusively with actual cases. In what follows, I will begin with examples that support the weak argument and then move on to discuss the evidence for the strong argument.

The hermeneutics of Scripture and Nature

Moving through the same layers of increasing specificity found in the General Scholium that range from natural theology to antitrinitarianism, we will examine the question of interaction and impact. As Westfall's comments above imply, few today would doubt that Newton's advocacy of the design argument and his belief in God played an active role in his natural philosophy. For this reason, we need not be long detained with this first layer, other than to note that these commitments would have served to provide a powerful motivation for Newton to search out the wonders of Creation as a high priest of nature.¹¹⁶ More needs to be said, however, when we come to scriptural interpretation. Some recent scholars have pointed to analogies between Newton's biblical hermeneutics and his natural philosophical methodology.¹¹⁷ Here Newton's four "Rules of reasoning in philosophy" are important. In Rules II and III, Newton argues for the unity of phenomena in Nature and that one infers general principles from the observation of specifics.¹¹⁸ For example, in Book III of his *Principia*, Newton famously demonstrates that lunar motion obeys the inverse-square law, and then, applying Rules I, II, III and IV, goes on to extrapolate from this specific case a general principle that applies to all planetary motion—universal gravitation.¹¹⁹ This is roughly analogous to one of Newton's fundamental principles of scriptural

¹¹⁴At the same time, I do not want to draw a sharp distinction between method and content, as it is plain that the former can help shape the latter (and hence even data can be "theory-laden"). Thus it is easy to see how Newton's method of natural philosophy could help determine the content of the same. If, however, Newton's natural philosophical style was in turn informed by theological practice, this in itself would show an indirect influence of the theological on the natural philosophical.

¹¹⁵Although integration was still the dominant theme in relations "between" natural philosophy and theology in the early eighteenth century, the fact that Newton finds it necessary to assure his readers in the General Scholium that discoursing of God does belong to the domain of experimental (second edition) or natural (third edition) philosophy (Motte, *Principles*, 2:391-2; Motte-Cajori, *Principles*, 2:546; Cohen-Whitman, *Principia*, p. 943), does nevertheless demonstrate both that the assumption was already in dispute and that Newton and others were perfectly able to articulate a distinction between these fields of endeavour.

¹¹⁶On this role, see H. Fisch, "The Scientist as Priest: A Note on Robert Boyle's Natural Theology," *Isis*, 1953, 44:252-65; Peter Harrison, *The Bible, Protestantism and the Rise of Natural Science* (Cambridge: Cambridge Univ. Press, 1998), pp. 198-9, 203.

¹¹⁷See especially Force, "Newton's God of Dominion" (cit. n. 5), pp. 89-90 and M. Mamiani, "The Rhetoric of Certainty: Newton's Method in Science and in the Interpretation of the Apocalypse," *Persuading Science*, ed. M. Pera and W.R. Shea (Canton: Science History, 1991), pp. 157-72. On the close methodological and conceptual relationship in the early modern period between the interpretation of the Books of Nature and Scripture, see Harrison, *The Bible, Protestantism and the Rise of Natural Science* (cit. n. 116), *passim*.

¹¹⁸Motte, *Principles*, 2:202-5; Motte-Cajori, *Principles*, 2:398-400; Cohen-Whitman, *Principia*, pp. 795-6.

¹¹⁹Motte, *Principles*, 217-220; Motte-Cajori, *Principles*, 2:409-10, 413; Cohen-Whitman, *Principia*, pp. 805-6. Compare this with the following that David Gregory recorded after a discussion with Newton: "The best way of overcoming a difficult Probleme is to solve it in some particular easy cases. This gives much light into the general solution. By this way Sir Isaac Newton says he overcame the most difficult things" (*David Gregory, Isaac Newton*,

hermeneutics, in which one works outward from passages that are easily understood to induce the meaning of the more ambiguous texts. In an important prophetic manuscript from the 1670s, Newton lays down several “Rules of Interpretation” intended to determine “when an interpretation is genuine & of two interpretations which is the best.”¹²⁰ Similarly, in his antitrinitarian “Two notable corruptions” of 1690, Newton declared that “in disputable places” of Scripture he loved “to take up wth what I can best understand.”¹²¹

A desire for simplicity is also found in Newton’s reading of Nature, and he writes in Rules I and III that “Nature is pleas’d with simplicity” and “wont to be simple.”¹²² Now recognized as common motifs in the history of science, the desire for simplicity and the principle of parsimony also manifest themselves in Newton’s scriptural studies when he contends for these ideals against a backdrop of corrupting and complicating influences from philosophy and metaphysics.¹²³ Newton wrote that “[t]he human race is prone to mysteries, and holds nothing so holy and perfect as that which cannot be understood . . . It is the concern of theologians that the conception [of God] be made as easy and reasonable as possible.”¹²⁴ Like Galileo before him, Newton believed that the Scriptures are reasonable and composed in the tongue of the vulgar.¹²⁵ Thus, there is an *expectation* that the Bible is written in plain and lucid language. Newton’s professed desire to avoid introducing hypotheses in natural philosophy aligns with his suspicion about infusing metaphysics into Scripture. Newton sought a certain method of interpretation for the study of biblical prophecy so that the “y^e liberty of wresting it to private imaginations [might] <be> cut of.”¹²⁶ He also contended that one should “prefer <chose> [sic] those interpretations w^{ch} are most according to y^e litterall meaning of the scriptures.”¹²⁷ Newton would admit no conjectures in theology: “The first Principles of the Christian religion are founded, not on disputable conclusions opinions or conjectures or <on> humane sanctions, but on the express words of Christ & his Apostles.”¹²⁸ Here strict biblicism sounds a lot like strict empiricism. These were, of course, methodological *ideals*, so the fact that Newton did not always hold to them in no way detracts from what should now be obvious: Newton employed similar strategies in his interpretation of the Books of Scripture and Nature.

Newton was also conscious that such interaction existed in his own work. In outlining a series of principles for the exegesis of biblical prophecy in the 1670s, he offers an implicit affirmation to this effect when comparing the interpretation of Scripture with that of Nature. Beginning with a variation on Ockham’s razor, he states that it is important

To prefer <choose> those interpretations <constructions> w^{ch} without straining reduce things to the greatest simplicity . . . Truth is ever to be found in simplicity,

and *Their Circle*, ed. W.G. Hiscock [Oxford: Printed for the Editor, 1937], p. 25).

¹²⁰Newton, Yahuda MS 1.1a, f. 10r.

¹²¹Newton, *Correspondence of Newton* (cit. n. 8), 3:108; cf. Newton, Keynes MS 5, ff. 1r-2r.

¹²²Motte, *Principles*, 2:202-3; Motte-Cajori, *Principles*, 2:398; Cohen-Whitman, *Principia*, pp. 794-5 (second quotation from the Motte-Cajori translation).

¹²³This is not to say that Newton himself did not devote time to musing on his own version of metaphysics. McGuire has in fact devoted an entire book to Newton’s metaphysics of nature (McGuire, *Tradition and Innovation* (cit. n. 7)).

¹²⁴CUL MS. Add. 3965, f. 546r (translated from Latin).

¹²⁵Newton, Yahuda MS 15.5, f. 99r. Newton elsewhere wrote that the Scriptures do not speak “in the language of Astronomers (as [some] think) but in that of y^e common people to whom they were written” (Newton, CUL MS Add. 4005, Sec. 7, published in Cohen, “Isaac Newton’s *Principia*, the Scriptures, and the Divine Providence” (cit. n. 7), p. 544).

¹²⁶Newton, Yahuda MS 1.1a, f. 10r.

¹²⁷Newton, Yahuda MS 1.1a, f. 12r.

¹²⁸Newton, Keynes MS 3, p. 13r.

& not in y^e multiplicity & confusion of things. As y^e world, w^{ch} to y^e naked eye exhibits the greatest variety of objects, appears very simple in its internall constitution when surveyed by a philosophic understanding, & so much y^e simpler by how much the better it is understood, so it is in these visions. It is y^e perfection of a^{ll} God's works that they are all done wth y^e greatest simplicity. He is y^e God of order & not confusion. And therefore as they that would understand y^e frame of y^e world must indeavour to reduce their knowledg to all possible simplicity, so it must be in seeking to understand these visions.¹²⁹

In this analogy, God guarantees that both Scripture and Nature can be understood by the human mind. What is more, both God's Word and God's Works were given and made in such a way that they are at the fundamental level simple and uncomplicated, and thus both should be approached with the same method. While the pervasiveness of the parsimony principle in the history of science allows for the possibility that what we are seeing here is cross-fertilization or even the impact of natural philosophy on theology, the pivotal link for Newton in this place at least is not some philosophical abstraction of parsimony, but the "y^e God of order" Who ensures that this is so.

Over a decade later, in the first edition of the *Principia*, Newton makes another deliberate association between scriptural hermeneutics and natural philosophical method. In the Scholium to his Definitions at the beginning of his work, Newton distinguishes between absolute and relative time, space, place and motion. He concludes that "relative quantities, are not the quantities themselves, whose names they bear, but those sensible measures of them." He goes on to say: "if the meaning of words is to be determin'd by their use; then by the names Time, Space, Place and Motion, their [sensible] measures are properly to be understood; and the expression will be unusual, and purely Mathematical, if the measured quantities themselves are meant."¹³⁰ At this point Newton brings in the analogy of scriptural hermeneutics:

Upon which account, they do strain the Sacred Writings [*sacris literis*], who there interpret those words for the measur'd quantities. Nor do those less defile the purity of Mathematical and Philosophical Truths, who confound real quantities themselves with their relations and vulgar measures.¹³¹

Thus, as early as 1687 Newton employed similar arguments about the need to distinguish the relative from the absolute in Nature as he did twenty-six years later with respect to the term "God" in his General Scholium. And this must not be taken as evidence that his theological analysis eventually caught up with his natural philosophy in 1713, for already in 1687 he is making clear that what applies in natural philosophy also applies in biblical exegesis. For Newton, there was no epistemic wall dividing the study of God from that of His Creation.

It is possible to identify further analogies. As I demonstrated above, Newton was most unhappy with the intrusion of metaphysical concerns into revealed doctrine. He also pointedly denied that "we have any idea of the substance of God," but rather that we know him only

¹²⁹Newton, Yahuda MS 1.1a, f. 14r.

¹³⁰Motte, *Principles*, 1:16-17; Motte-Cajori, *Principles*, 1:11; Cohen-Whitman, *Principia*, pp. 413-14. (I have inserted "sensible" in the second quotation, following both the Cajori revision and the Cohen-Whitman translation).

¹³¹Motte, *Principles*, 1:17; Motte-Cajori, *Principles*, 1:11; Cohen-Whitman, *Principia*, p. 414. As Cohen points out, the Cajori revision of Motte's translation obscures this direct reference to the Bible (Cohen, "Isaac Newton's *Principia*, the Scriptures, and the Divine Providence," (cit. n. 7), pp. 524-8). This misleading translation is corrected in the new Cohen-Whitman translation, which renders the passage: "Accordingly those who there interpret these words as referring to the quantities being measured do violence to the Scriptures. And they no less corrupt mathematics and philosophy who confuse true qualities with their relations and common measures."

through his attributes, acts and final causes.¹³² Newton appears to be using his professed nescience of the ontology of God in part to prepare the way for what he says in the very next paragraph. Responding to the accusation that he had introduced “occult qualities” into his physics by not identifying a cause for gravity, Newton declared: “I frame no hypotheses. For whatever is not deduc’d from phænomena, is to be called an hypothesis; and hypotheses, whether metaphysical or physical, whether of occult qualities or mechanical, have no place in experimental philosophy.”¹³³ Biblical doctrine, too, was to be derived directly and expressly from the revealed Word.¹³⁴ Newton would admit no conjectures in theology: “The first Principles of the Christian religion are founded, not on disputable conclusions opinions or conjectures or ⟨on⟩ humane sanctions, but on the express words of Christ & his Apostles.”¹³⁵ “It is not enough to say that an article of faith may be deduced from scripture,” Newton once wrote, “[i]t must be express in the ⟨very⟩ form of sound words in w^{ch} it was delivered by the Apostles . . . ffor men are apt to ⟨vary⟩ dispute, and run into partings about deductions.” “All the old Heresies lay in deductions,” Newton concluded, “the true faith was in the text.”¹³⁶ Inspired text or natural phenomena, Newton claimed that he would no more speculate about the nature of God than he would about

¹³²Motte, *Principles*, 2:391; Motte-Cajori, *Principles*, 2:546; Cohen-Whitman, *Principia*, p. 942.

¹³³Motte, *Principles*, 2:392; Motte-Cajori, *Principles*, 2:547; Cohen-Whitman, *Principia*, p. 943. As Bernard Cohen has argued, Newton’s claim, “*hypotheses non fingo*,” probably should be translated “I feign no hypotheses.” Newton did occasionally use hypotheses—even in his *Principia*. While it is possible that Newton sacrificed the virtue of consistency for a rhetorical and polemical flourish, if, as Cohen suggests, Newton was articulating a methodological policy in which “he does not invent or contrive fictions (or ‘hypotheses’) to be offered in place of sound explanations based on phenomena” (Cohen, “The Concluding General Scholium” (cit. n. 7), pp. 275-7), this programme would certainly align with his ideals in scriptural hermeneutics. Further support for Cohen’s reading of “*fingo*” can be found elsewhere in the *Principia* and in the rhetoric of two of Newton’s disciples. In his third rule of reasoning, Newton states: “We are certainly not to relinquish the evidence of experiments for the sake of dreams and vain fictions of our own devising” (Motte, *Principles*, 2:203; Motte-Cajori, *Principles*, 2:398; Cohen-Whitman, *Principia*, p. 795). In the preface to his *Physico-Mechanical Experiments*, Francis Hauksbee, Sr. sets out the Newtonian agenda of experiment in this way: “The Learned World is now almost generally convinc’d, that instead of amusing themselves with *Vain Hypotheses*, which seem to differ little from *Romances*, there’s no other way of *Improving* NATURAL PHILOSOPHY, but by *Demonstrations* and *Conclusions*, founded upon Experiments judiciously and accurately made” (Hauksbee, *Physico-mechanical experiments on various subjects* [London, 1709], [sig. A1r]). Similarly, Whiston speaks disdainfully of “the fictitious hypotheses” of the Cartesian philosophy (Whiston, *Memoirs of the Life and Writings of Mr. William Whiston*, 2nd ed [London, 1753], 1:32).

¹³⁴At one level, Newton is contending for the Hebraic sense against the intrusion of Greek sensibilities into biblical theology. Thus he once wrote when dealing with the names of Christ that “we are to have recourse unto the old Testament & to beware of vain Philosophy. For Christ sent his Apostles, not to teach Metaphysicks & Philosophy to the common people & to their wives & children, but to teach what he had taught them out of Moses & the Prophets & Psalms concerning himself” (Sotheby’s Lot 255.8, private collection). Cf. Newton, Yahuda MS 15.5, f. 99r.

¹³⁵Newton, Keynes MS 3, f. 13r.

¹³⁶Newton, Yahuda MS 15.1, f. 11r. Clarke, who wrote “I depend not on Authorities” (Clarke, *Works* (cit. n. 67), 4:267, held similar biblicist ideals. In a letter to John Jackson, he wrote, “I have all along chosen to insist *more largely* upon *SCRIPTURE*, than upon *natural Reason*; because the Great popular Objection against Men that Think seriously and carefully about these Things, is, that they are apt to adhere to their own *Reason* more than to the *Scripture*” (Clarke to Jackson, 23 October 1714, in [Jackson], *Three Letters to Dr Clarke, from a Clergyman of the Church of England* [London, 1714], p. 31). Whiston also adhered to the Newtonian dictum that there should be no hypotheses in religion, asserting that “hypothesis-makers are the great corrupters of true religion.” Whiston instead claimed that he turned only to the New Testament and the other early Christian writings he considered authoritative, and attests “to the world what doctrines, worship, and discipline I find therein contained; and this without any imaginary supposals whatsoever” (Whiston, *Memoirs* (cit. n. 133), 1:307).

the cause of gravity.¹³⁷ Instead, he was content to deal with the text and the effects; put another way, he wanted to focus on function and phenomenon, not essence and substance.¹³⁸ The unskilled handling of metaphysics and absolutes—especially by the vulgar—Newton knew, led to distortions and disputes. Just as Christianity became corrupt when theologians unwisely ventured into discussions of substance, so had natural philosophy. This phenomenalist ideal, in turn, provides insight into Newton’s motivations for engaging in *experimental* philosophy: one learned of God from “the appearances of things” and by observing active powers at work, not through the vain hypotheses of Descartes or the dark metaphysics of Leibniz.¹³⁹ Herein therefore lies another pervasive feature of Newton’s thought: in both theology and natural philosophy, appearance rather than substance was to be the focus of inquiry.

Newton’s God and his natural philosophy

With these powerful examples established, we can move beyond striking parallels and unity of method to identify ways in which Newton’s distinctive theology may have helped shape his view of Nature. First, Newton’s voluntarism and fervent faith in a God of dominion find prominent places in his natural philosophy. Newton’s God is continually active and constantly in control exercising His will over Creation, very much unlike the detached God of the Deists or Leibniz’s *Intelligentia Supramundana*. The conception of God’s supreme Lordship and dominion underpins Newton’s powerful sense of God’s unlimited duration and presence, which Newton in turn explicitly identifies as coextensive with his natural philosophical notions of absolute time and space.¹⁴⁰ Also, his expectations of discovering simplicity and order in Creation were based on a belief in a God of order Who made things that way. The same God was the Author of both the Books of Nature and Scripture, and thus both were not only consistent with each other, but this very consistency meant that both could be approached with the same methods and expectations. More than this, Newton’s specifically non-Trinitarian faith in the unity of God ensured for him unity within Creation. As Newton had said, the stars (and, by implication, the rest of Creation) “must all be subject to the dominion of One.”¹⁴¹ Both God’s Oneness and His absolute dominion ensure the unity of His Word and Works, and thus guarantee that one can infer general principles from specifics—whether scriptural teaching or natural phenomena. In

¹³⁷A main target of Newton’s argument was the Cartesian hypothesis for planetary motion, which he had savaged directly in the opening line of the General Scholium (Motte, *Principles*, 2:387; Motte-Cajori, *Principia*, 2:543; Cohen-Whitman, *Principia*, p. 939). It must be stressed, however, that in his attacks on vain hypothesizing, Newton was directing his animus against not only Descartes, but also Leibniz (*cf.* Cohen and Westfall, *Newton* (cit. n. 3), p. 163).

¹³⁸This stance was an important feature of the rhetoric of the first generation of Newtonians. For example, John Keill’s published Newtonian lectures, *Introductio ad veram physicam* (Oxford, 1701), not only contain an apologetic edge in their attacks on Cartesian mechanics and its concomitant propensity to atheism, but also censure Descartes’ desire to extend his inquiries to essences, rather than limiting himself to major properties—the policy of Newton (*DSB*, 7:276). On Newton’s scepticism about essence (which manifested itself decades before 1713), and his attack on Cartesian views on essence and substance, see McGuire, *Tradition and Innovation* (cit. n. 7), pp. 24-5; see also pp. 239-61 for a full discussion of the complexities of Newton’s doctrine of essential qualities.

¹³⁹Newton states this plainly in Draft C of the General Scholium when he writes: “the dominion or Deity of God is best demonstrated not from abstract ideas but from phenomena, by their final causes” (Hall and Hall, *Unpublished Papers* (cit. n. 3), p. 363).

¹⁴⁰Motte, *Principles*, 2:390; Motte-Cajori, *Principles*, 2:545; Cohen-Whitman, *Principia*, p. 941-2.

¹⁴¹Motte, *Principles*, 2:388-9; Motte-Cajori, *Principles*, 2:544; Cohen-Whitman, *Principia*, p. 940. For an extended discussion of the ways in which Newton’s antitrinitarian theology may have impacted on his natural philosophy, see Dobbs, *Janus Faces of Genius* (cit. n.7), pp. 213-49, 253-55. See also Cunningham, “How the *Principia* Got Its Name” (cit. n. 14), p. 384.

these cases the theological beliefs come first and as presuppositions play an important role in helping to inform and shape the natural philosophy. But there is more. As Manuel has astutely commented, in Newton's view there was in history a direct relationship between idolatrous polytheism (and Newton believed Trinitarianism to be such) and corrupt natural philosophy.¹⁴² For Newton, polytheism was opposed to natural philosophy precisely "because it accepted the idea of contrary and contradictory causes in nature which it associated with false gods."¹⁴³ And thus Newton held to his own heterodox variant of the agenda of the "two reformations"—that radical (and related) reform was needed in both theology and natural philosophy.¹⁴⁴ In both cases, this reform involved the recovery of the *prisca sapientia*—the original, primitive religion and the ancient knowledge of natural philosophy and mathematics.¹⁴⁵ All ancient wisdom had become corrupt, and Newton was determined to restore its pristine purity. Without question, Newton's studies of Scripture and Nature interacted in ways that were at once rhetorical, methodological *and* prescriptive. Here it is important to note both that Newton's heterodox conception of God came before the first edition of his *Principia*,¹⁴⁶ and that some of the principles of biblical exegesis that align so closely with his natural philosophical methods were in place as early as the 1670s.

But surely the most powerful evidence for interaction is the General Scholium itself. Newton's daring attack in this document on corrupt Trinitarian theology exposed—in a covert way—his two aims for the *Principia*.¹⁴⁷ In the Scholium we see the integration of Newton's natural philosophy with his heretical theology operating at a profound level. We also see the anti-Cartesian stance of the *Principia*'s General Scholium (and the revised Book II) conjoined with an assault on Newton's other wicked hypothesizers, the homoousians. The presentation of antitrinitarianism—now further clarified as tinged with Socinian argumentation—in the Scholium, along with the integral role the Creator God of dominion played in Newton's theology, should cause us to question Westfall's conclusion that Newton's heterodox theology did not help shape his natural philosophy. The testimony we have for sources of some of Newton's more distinctive theological ideas, whose derivation is independent of his natural philosophy, helps tip the balance in favour of at least some theological priority. The evidence presented in this paper suggests that Newton's theological concerns (both those he shared with his contemporaries and those he did not) made a not insignificant impact on both the

¹⁴²Manuel, *Religion of Newton* (cit. n. 7), p. 42. Newton inveighs against idolatry not only in the main text of the General Scholium when he writes that God ought not "to be worshipped under the representation of any corporeal thing," but also in both the note on God and the material added to the final form of the note on space (Motte, *Principles*, 2:391; Motte-Cajori, *Principles*, 2:545-6; Cohen-Whitman, *Principia*, p. 942). The additional material in the notes dramatically increased the amount of rhetoric against idolatry in the 1726 edition.

¹⁴³Manuel, *Religion of Newton* (cit. n. 7), p. 43.

¹⁴⁴On the tops of the two reformations, see Harrison, *The Bible, Protestantism and the Rise of Natural Science* (cit. n. 116), pp. 64-120.

¹⁴⁵On Newton's commitments to the *prisca* tradition, see J.E. McGuire and P.M. Rattansi, "Newton and the 'Pipes of Pan'," *Notes and Records of the Royal Society* (1966) 21: 108-43; Paolo Casini, "Newton: The Classical Scholia," *History of Science*, 1984, 22: 1-57; B.J.T. Dobbs, *The Janus Faces of Genius* (cit. n. 7); and Niccolò Guicciardini, *Reading the Principia: The Debate on Newton's Mathematical Methods for Natural Philosophy from 1687 to 1736* (Cambridge: Cambridge University Press, 1999).

¹⁴⁶*Cf.* Cunningham, "How the *Principia* Got Its Name" (cit. n. 14), p. 384.

¹⁴⁷As demonstrated above, Newton's attack on corrupt scriptural hermeneutics and incorrect interpretations of Nature is already a fixture of the first edition of the *Principia*.

methodological and cognitive dimensions of his natural philosophy.¹⁴⁸ But we need not speculate about whether Newton himself thought it appropriate to include God in the endeavour of natural philosophy. As he himself forcefully concludes the theological portion of the General Scholium: “to treat of God from phenomena is *certainly* a part of natural philosophy.”¹⁴⁹

There is one final important association between Newton’s theology and his natural philosophy. Newton was adamant that in religion and philosophy the more difficult truths were to be handled only by the mature, experienced and adept. Drawing his basic framework for this from Hebrews 5, Newton made a firm distinction between “milk for babes” and “meat for elders.”¹⁵⁰ This distinction is similar to the Erasmian division between *fundamenta* (fundamentals) and *adiaphora* (indifferent things), but with one important difference: for Newton the “meat” was by no means indifferent. For Newton the first concerned the minimum doctrine required by all during catechetical instruction before baptism; the latter related to the more profound doctrines that one advanced to through skill and election. Here we see Newton’s belief in the existence of a minority, remnant class. In matters of faith, he did not believe that “all that call themselves Christians” would understand, but that only “a remnant, a few scattered persons which God hath chosen . . . as Daniel hath said that y^e wise shall understand, so he hath said also that none of y^e wicked shall understand.”¹⁵¹ There is an evident synonymy between Newton’s theological belief in the remnant and his philosophical notion of the adept, for he also intended the higher meanings of his natural philosophy only for the *cognoscenti*. John Conduitt records the following revealing exchange:

Mr Machin said to S^r I. N when courses of experiments were first in vogue what a pity it was that when people had a demonstration by Geometry they should trust to their senses w^{ch} might be deceived, upon w^{ch} Sir Isaac said he had first proved his inventions by Geometry & only made use of experiments to make them intelligible & convince the vulgar.¹⁵²

¹⁴⁸Additional possible examples of the impact of Newton’s theology on his natural theology have been offered and are worth exploring. At the level of method, Michael Ben-Chaim has recently suggested that Newton modelled his 1672 paper on colours on the form and structure of the Puritan sermon (Ben-Chaim, “Doctrine and Use: Newton’s ‘Gift of Preaching’,” *History of Science*, 1998, 36:269-98). Some fascinating possibilities of interaction are also put forward by Loup Verlet (Verlet, “‘F = MA’ and the Newtonian Revolution: An Exit from Religion through Religion,” *History of Science*, 1996, 34:303-46). Another possibility exists with the cognitive content of Newton’s mathematics. Jim Force has argued that “Newton’s method of fluxions [calculus] is inevitably connected with his theory of the continuous dominion of God since the creation” (Force, “Newton’s God of Dominion” (cit. n. 5), p. 88). Force’s insight can be taken even further, for, as Cohen has pointed out, Newton’s concept of absolute time (as in true, astronomical time, as opposed to relative, observed time) in which time progresses at an absolute, uniform speed, is the same as the uniformly and continuously flowing “mathematical time” Newton uses in his fluxions (Cohen, “Guide to Newton’s *Principia*,” in Cohen-Whitman, *Principia*, pp. 106, 116). Taking this a step further, it is clear that Newton himself made a positive association between absolute, continuously flowing time and God (*cf.* the discussion of absolutes and relatives in the Scholium to the Definitions at the beginning of the *Principia*, with Newton’s statements in the General Scholium about God Himself constituting “Duration and Space” (Motte, *Principles*, 1:9-18, 2: 390-1; Motte-Cajori, *Principles*, 1:6-12, 2:545; Cohen-Whitman, *Principia*, pp. 408-15, 941-2).

¹⁴⁹Cohen-Whitman, *Principia*, p. 943. Emphasis mine. Newton’s use of the adverb *utique* (“certainly”) reveals both his earnestness and his awareness that the claim was by then in dispute.

¹⁵⁰Newton, Keynes MS 3, *passim*; Bodmer MS 3, f. 2r; Rob Iliffe, “‘Making a Shew’: Apocalyptic Hermeneutics and the Sociology of Christian Idolatry in the Work of Isaac Newton and Henry More,” in Force and Popkin, *The Books of Nature and Scripture* (cit. n. 64), pp. 55-88, on pp. 79-81; Snobelen, “Isaac Newton, Heretic” (cit. n. 46), pp. 389-91.

¹⁵¹Newton, Yahuda MS 1.1a, f. 1r.

¹⁵²Conduitt, Keynes MS 130.9, ff. 2r-v.

While Newton's comment may contain more than a little bravado, he also articulated a similar sentiment when he told William Derham that "to avoid being baited by little Smatterers in Mathematicks . . . he designedly made his *Principia* abstruse; but <yet so as> to be understood by able Mathematicians."¹⁵³

But it is not only Newton's theological remnant that mirrors the philosophical adept, for it is evident that Newton's division of the absolute and the relative also applies to both his theology and natural philosophy. As shown above, Newton applied the distinction between absolute and relative to the interpretation of Scripture. He discussed these issues in a more revealing manner in an unpublished series of definitions that follow his tract *De Motu*. These comments represent a more explicit version of the above-cited material on the Sacred Scriptures from the Scholium to the introductory Definitions to the *Principia*. It is interesting to see Newton move with ease "between" natural philosophy and theology, intellectual fields he clearly did not view as separate spheres:

it has been necessary to distinguish absolute and relative quantities carefully from each other because all phenomena may depend on absolute quantities, but ordinary people who do not know how to abstract their thoughts from the senses always speak of relative quantities, to such an extent that it would be absurd for either scholars or even Prophets to speak otherwise in relation to them. Thus both the Sacred Scripture and the writings of Theologians must always be understood as referring to relative quantities, and a person would be labouring under a crass prejudice if on this basis he stirred up arguments about absolute [*changed to philosophical*] notions of natural things.¹⁵⁴

Similarly, Newton believed that the ancients "practised a two-fold philosophy, sacred and vulgar: the Philosophers handed down the sacred to their disciples through types and riddles, while the Orators recorded the vulgar openly and in a popular style."¹⁵⁵ Absolute qualities, then, are not for the masses. For Newton this includes mathematical truth, the substance of God and the primary cause of gravity.¹⁵⁶ It even applies to his religious life, as he only revealed those aspects of his beliefs (natural theology, biblicism, church attendance) associated with "milk," but hid the

¹⁵³Keynes MS 133, p. 10. On Newton's attempts to render the *Principia* obscure, see Rob Iliffe, "Cambridge and London: Private Liberty, Understanding and the Public World of the *Principia Mathematica*," unpublished typescript, 1999. See also Snobelen, "On Reading Isaac Newton's *Principia* in the 18th Century," *Endeavour*, 1998, 22:159-63.

¹⁵⁴The implied synonymy for Newton between "absolute" and "philosophical" in the emendation is instructive. The translation given here is that of Cohen, "Guide," Cohen-Whitman, *Principia*, p. 36. The word "notions" in the last line could be translated as "motions," if the Latin *motibus* (*motus*) in this context is taken to refer to physical, rather than mental, motion. The original Latin text can be found in *The Mathematical Papers of Isaac Newton*, ed. D.T. Whiteside, 8 vols. (Cambridge: Cambridge Univ., 1967-1981), 6:192. The Latin text, along with a less accurate translation than Cohen's, is also given in John Herivel, *The Background to Newton's Principia: A Study of Newton's Dynamical Researches in the Years 1664-84* (Oxford: Clarendon, 1965), pp. 306-7, 312.

¹⁵⁵Newton, Yahuda MS 16.2, f. 1r (translated from Latin).

¹⁵⁶Newton's elusive discussion of gravity in the General Scholium provides an excellent example of this, for while he publicly declared his unwillingness to hypothesize about its source, in private he often spoke more candidly about God being the primary cause. Among those aware of these private thoughts were Nicolas Fatio de Duillier, David Gregory, Christopher Wren and William Whiston (*Correspondence of Newton* (cit. n. 8), 3:308-9, 4:266, 267; *David Gregory*, ed. Hiscock (cit. n. 119), p. 30; Whiston, *Authentick Records* (cit. n. 12), II:1072-3). For an outline of the scholarly debate over what exactly Newton may have meant by this attribution, see John Henry, "'Pray do not ascribe that notion to me': God and Newton's Gravity," in *The Books of Nature and Scripture*, ed. Force and Popkin (cit. n. 64), pp. 123-47.

“meat” (the higher truths of his heresy) from the prying eyes of the incompetent public.¹⁵⁷ This epistemological dualism between relative and absolute, open and closed, public and private, vulgar and philosophical, experiment and theory, and milk and meat permeates every major area of Newton’s thought.¹⁵⁸

Newton’s rhetorical strategy for the General Scholium is brilliant. The two positions he wanted everyone to understand (natural theology and anti-deism) he made absolutely clear. But for the rest, access was restricted. Even an able intimate like Cotes appears to have advanced only as far as the God of dominion. A measure of the success of Newton’s policy is seen in that everyone who knew the later editions of the *Principia* also understood the central place Newton gave God (even, famously, Napoleon), but it has taken years of historical research and literary archaeology for specialist scholars working with previously inaccessible manuscripts to begin to unravel the layered encoding and identify the subtextual elements. This literary archaeology is made necessary by Newton’s style of composition, in which he hides his hermeneutical analysis in the General Scholium, just as he deliberately hid much of the mathematical analysis in the rest of the *Principia*—which is the main reason why so many contemporaries found the book so hard to read.¹⁵⁹ Thus we return to the Russian doll model. Newton begins the theological

¹⁵⁷This is not to say that Newton always employed these distinctions consistently, or that all of his statements on the division of theological truth into two categories can be assimilated neatly and easily into the two orders of absolute and relative. For example, in one place Newton states that “Religion is partly essential (fundamental) & immutable partly circumstantial & mutable” (Newton, Keynes MS 7, p. 1). Is this statement informed by Newton’s division between absolute and relative? If so, is the “immutable” to be equated with the absolute (as the term “immutable” may suggest), or does it stand as a synonym for the relative (as the essential “milk” is elsewhere characterized by Newton)? In fact, Newton is here doing something somewhat different, for as the rest of Keynes MS 7 itself hints, and as two parallel passages from Sotheby’s Lot 255.1 now confirm, Newton is outlining the distinction between the pure, original Noahic religion, which contains the essential nucleus of religion and morality for all people in every age, and the temporary, ceremonial aspects of religion (some, such as the Mosaic Law, being divine institutions; others, such as the worship of dead men, the idolatrous additions of humans).

¹⁵⁸Barry H. Downing was the first to bring out this feature of Newton’s thought with force and clarity, and I am taking the expression “epistemological dualism” from him (Downing, “Eschatological Implications of the Understanding of Time and Space in the Thought of Isaac Newton,” PhD thesis, University of Edinburgh, Faculty of Divinity, 1966, pp. 210ff). It was while developing my own ideas on the consonance between Newton’s theological division between milk and meat, and its natural philosophical corollaries, that I first read Downing’s brilliant thesis, and I am indebted to his work for providing additional insight. More recently, José Faur, with no apparent knowledge of Downing’s work, has also come to similar conclusions, with the added surmise that a chief source for Newton’s distinction between the absolute and relative is the Jewish philosopher and rabbinic scholar Moses Maimonides. Faur writes: “The distinction between two levels of perception—an exoteric one accessible to the masses and an esoteric one reserved for the intellectual elite—is the cornerstone of Maimonides’s hermeneutics” (Faur, “Newton, Maimonides, and Esoteric Knowledge,” *Cross Currents: Religion & Intellectual Life—The Journal of the Association for Religion and Intellectual Life*, 1990, 40:526-38; cit. from p. 534). Faur’s suggestion offers one feasible source for Newton’s epistemological dualism, and while it is beyond the scope of his study to assess the origin of Newton’s stance (which may in any case prove elusive), it will be worthwhile to mention other possibilities. First, aside from the aforementioned similarity with Locke’s primary and secondary qualities, one can certainly see strong analogies with Plato’s distinction between Forms (the real) and imitations (appearances) and their cognitive corollaries of *epistēmē* (ἐπιστήμη; knowledge or understanding) and *doxa* (δόξα; mere opinion or belief), with the former characteristic of philosophers and the latter of the common people. To add to this Platonic commonplace is the tradition in alchemy of higher truths revealed only to the initiate. Finally, there is the theological division between the remnant or elect and the apostate or reprobate, along with the aforementioned distinction in biblical theology between milk and meat—except that in the Book of Hebrews the implication is that *all* believers should progress from milk to meat.

¹⁵⁹On Newton’s omission of his mathematical analysis in the *Principia*, see Guicciardini, *Reading the Principia* (cit. n. 145), esp. pp. 115-17. A further analogy between his natural philosophical and theological strategies is seen in the fact that while Newton obscured the mathematical analysis in his public texts, he revealed it to a small

section of the General Scholium with the generalities of natural theology, an “open” aspect of the document that brought the widest range of concord and support,¹⁶⁰ taking in not only all Christians, but Deists as well. But after setting out the argument from Design Newton draws the reader in to successively narrower creeds, through belief in the God of the Bible, to antitrinitarian conceptions and on to specialized antitrinitarian positions held only by a tiny minority in his day. At each new layer, different categories of readers either find themselves out of their depth or withdraw their assent until only a small group of adepts remain—the remnant.

It should now be obvious that the General Scholium is itself constructed with exoteric and esoteric strata.¹⁶¹ Confirmation that the division between “milk” and “meat” applied within the General Scholium is found in Newton’s “Irenicum,” where he specifically states that discussions of the relations that define names are only fit for “men of riper years.”¹⁶² This additional insight resolves the implied contradiction between Newton’s apparent desire to preach and his efforts to limit access to his meaning.¹⁶³ The genius of the General Scholium is that it can operate at two levels that correspond to the open and closed, the exoteric and esoteric, the relative and absolute. The treatment of natural theology, along with the centrality of the active and willful God of Israel, demonstrated to both opponents and allies alike that the physics of the *Principia* was consistent with revealed religion. This served Newton’s public ends. But the attack on corrupt Trinitarian hermeneutics and wayward natural philosophy revealed the true faith to both perceptive apostates and fellow members of the remnant. This served Newton’s private aims. The deeper meanings of the General Scholium were not meant for everyone.¹⁶⁴ This, along with the need for circumspection in matters of religious heterodoxy, helps explain that while Newton’s intentions for this concise yet powerful manifesto of his natural philosophy and theology were conscious, deliberate and calculated, it was only in a coded and almost subversive manner that he revealed them to all (who could understand).

Pre-publication version of Stephen D. Snobelen, “‘God of gods, and Lord of lords’: the theology of Isaac Newton’s General Scholium to the *Principia*”, *Osiris* 16 (2001): 169-208.

group of acolytes (Guicciardini, *Reading the Principia*, pp. 116, 169-94), just as he did with his heretical theology (Snobelen, “Isaac Newton, Heretic” (cit. n. 46), pp. 389-91.).

¹⁶⁰See, for example, the apologetic use of the natural theology of the General Scholium in *The Evidences of the Christian Religion* (London, 1730), p. xx.

¹⁶¹For a tacit admission by Newton that he did hold back explicit meaning in his *Principia* (in this case, in his cometography), see Keynes MS 130.11. It is interesting to note that Newton also concluded his *Opticks* (in versions from 1706) with a vignette of his grand programme, but one that, like the General Scholium, only hints at what is made plain in his private papers (in this analogous example, Newton’s terse public comments on the corruption of the Noahic religion in the *Opticks* can be interpreted with Yahuda MSS 16 and 41—Newton’s writings of the origin of Gentile theology).

¹⁶²Newton, Keynes MS 3, p. 33.

¹⁶³Newton’s desire to preach his antitrinitarian faith is eloquently demonstrated by his original intention to publish anonymously through John Locke his “Two Notable Corruptions” in 1690—at the height of the Trinitarian-Unitarian controversy of the late 1680s and 1690s. I detail this and other examples in Snobelen, “Isaac Newton, Heretic” (cit. n. 46), pp. 401-8. On the “Two Notable Corruptions,” see Scott Mandelbrote, “Newton and Eighteenth-Century Christianity,” *The Cambridge Companion to Newton*, forthcoming.

¹⁶⁴Thus it is difficult to accept the dichotomy Verlet has imposed on Newton’s thought between the public physics of the *Principia* and the private theology Newton intended to keep secret (Verlet, “The Newtonian Revolution” (cit. n. 148), p. 333). The division between public and private (to use those terms) existed *within*, and not between, his natural philosophy and his theology. Newton revealed of each what he wished, and kept the deeper meanings of both to himself and the adepts.