

Newton in Jerusalem

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Flanking one of the display cases in *Newton's Secrets*, the current exhibition in the Jewish National and University Library in Jerusalem, hang two poster-size illustrations: One is William Blake's watercolor *Portrait of Sir Isaac Newton*, and the other an image of the medieval Jewish thinker Maimonides. The images present a parataxis if not a paradox: Blake called Newton one of the "three satanic teachers." Together with Francis Bacon and John Locke, Blake's Newton had emptied the world of vitality and mystery, reducing nature to the cold calculations of mathematical equations. According to one of his biographers, Gale E. Christianson, Newton bequeathed a cosmos of "material bodies moving freely through the boundless and bottomless abyss, a colossal machine made up of components whose only attributes are position, extension, and mass." Newton had thus succeeded in rationalizing a fully material universe.

Yet the image of Maimonides and the adjacent image from Newton's manuscript *Notes on the Jewish Temple* reveal another story. Tellingly, Newton showed no interest in Maimonides' philosophical rationalism: He did not own *The Guide for the Perplexed*. Newton did, however, own Latin translations of several sections of Maimonides' legal compilation, *Mishneh Tora*—including those on idolatry, sacrifices, and Temple service. In his notes on the latter, Newton pens a bold, block Hebrew "Baruch Shem K'vod Malchuto L'olam Va'ed" ("Blessed is the name of his glorious kingdom forever and ever"). To Newton, God's glorious kingdom was the created universe, and everywhere within that frame, Newton struggled, as his

Maimonidean inquiries indicate, to find resonances of the divine name. It is still the former Newton, author of the *Principia* (1687) and the *Opticks* (1704), both associated with Blake's circumscribing compasses of objectivity, that compels the contemporary imagination. *Newton's Secrets*, however, documents the other figure: The Newton fascinated by alchemy, prophecy, and the service of the Temple in Jerusalem. As *Newton's Secrets* reveals, Newton's lifelong interest in theology and four-decade preoccupation with alchemy (he wrote close to a million words on the subject) were not an aberration to the public rationalist Newton. Rather, they provide a glimpse into his complicated though still unified legacy, which stands at the beginning of modernity but hearks back to the ancients and Jerusalem.

Newton's archival legacy mirrors that of his reputation: While the *Opticks* and the *Principia* were reprinted from their first publication, Newton's non-scientific works—first under the custodianship of his assistant at the Royal Mint, John Conduitt (husband to his niece), and later passed into the hands of the Portsmouth family—remained in relative obscurity. The Portsmouth Papers were donated to Cambridge University in 1872; in 1888, the papers were classified by four scholars—a physicist, chemist, medievalist, and astronomer—under various headings. Those labeled as, for example, “Chemistry,” “History,” and “Miscellaneous Papers,” were retained for the library; five parcels, however, were delivered back to the Portsmouth family seat, Hurstbourne, as being “of very little interest.” It was not until a Sotheby’s auction in the summer of 1936 that the contents of the collection (in competition with a simultaneous sale of Impressionist art) were sold for nine thousand pounds. John Maynard Keynes acquired most of the alchemical manuscripts (donating them to Cambridge University); Abraham Yahuda purchased the bulk of the theological writings, donating them to the State of Israel in 1951. The collection, after a series of legal disputes, finally arrived at the Jewish National and University Library in Jerusalem in 1969. *Newton's Secrets* displays this collection for the first time.

To Blake's triumvirate of Enlightenment villains he might easily have added the name of Descartes. For it was Cartesian dualism, entailing the breaking of the ties which bound spirit and matter together, that provided the greatest obstacle to early modern thinkers in search of the divine presence. Newton's contemporary the Cambridge Platonist Henry More first greeted Cartesian philosophy with enthusiasm but realized quickly that it entailed a conception of the world devoid of spirit and therefore a threat of materialism abhorrent to More's own Christian worldview. Descartes sensed as much himself: What a contemporary described as the "vital conjunction of body and soul" was located by Descartes in the brain's "pineal gland." Whether the Cartesian "refined corporeal wind" situated in the pineal gland was a concession (or a joke), it points to the extent to which Cartesian philosophy had emptied the physical world of any residue of the spirit.

Yet Descartes could not be ignored. Newton accepted Cartesian categories, and an earlier manuscript on *Of Natural Laws* concedes a "vulgar chemistry" comprising solely mechanical motion of inactive matter. This notion—that bodies move only when acted upon—is echoed in the General Scholium to the *Principia*: "Bodies remain at rest until moved, or retain their motion depending on the degree of force initially applied." This was the Newton who would be canonized: The Newton of harmonious mechanism, heralded by Richard Bentley and later Samuel Clarke (in lectures named after the founder of the Royal Society, Robert Boyle) for providing a cosmology suited to the needs of the emerging liberal polity. Republicans like John Toland (who publicly attacked the cosmology of the *Principia*) elaborated a conception of inspirited matter to justify their radical political ideals. The wealth of oligarchy, however, for which Bentley and Clarke were the spokesmen, was made possible by an ordered, rational, and inert universe with, as Margaret Jacob remarks, "the God of Newton comfortably in control."

Yet, in *Of Natural Laws*, with all of its Cartesian resonances, Newton describes a different kind of chemistry to qualify the vulgar "mechanical" kind—a "more subtle" and "secret" *vegetable* chemistry. Cartesian

mechanism may be the starting point, but the “vegetable spirit” of this early work transforms into the multifarious ethers, spirits, winds, and effluvia which are as much a part of Newton’s “scientific” writings as of their alchemical counterparts. These vital forces are, for Newton, the divine means of animating the passive materials of the universe. Alchemists distilled the spiritual essence, “the living universal innate spirit,” of material forms: *Newton’s Secrets* shows Newton’s alchemical artistry, distilling the spiritual quintessence from the materials at his disposal—not only matter itself, but history, the works of the ancients, and the Temple in Jerusalem.

Newton frowned upon his contemporaries who—believing they could foretell the future—dated the coming apocalypse described in the book of Revelations to the seventeenth and eighteenth centuries. In Newton’s speculations, based upon readings of Revelations and the book of Daniel (some jotted on a letter slip), he pushed off the date to 2060 and criticized the “rash prophecies of fanciful men” who “bring sacred prophecy into discredit.” For Newton, prophecies were given not to satisfy men’s curiosities, but rather, once fulfilled, to provide a “convincing argument that the world is governed by providence”—to illustrate the divine presence in history. Just as history was shown to be the place of divine activity, so Newton turned back to the wisdom of the ancients, the *priscia sapiens*, demonstrating how such philosophies were redolent with notions of the divine. In one of his notebooks Newton copied out the following sentence, “The first inventor of the atomical Philosophy was Moschus [i.e., Moses].” To Newton, Moses as lawgiver bestowed not only theological but scientific laws. Though sometimes corrupted by pagan beliefs, the wisdom of the ancients partaking of the Mosaic inheritance contained (when properly deciphered) both the doctrine of *ex nihilo* creation and knowledge of a Copernican, heliocentric universe. The “theology” of the ancients was “philosophical”; their knowledge of “astronomy and physics” led to a conception of worship which anticipated the Christian.

The ancients performed such worship in their *pyrataneum*—or fire altars—structured to “represent the whole system of the heavens.” These altars not only mirrored the heliocentric cosmos, but they anticipated the perfect form of the Temple of Jerusalem. Newton’s two folio illustrations of the Temple, posthumously published in *The Chronology of Ancient Kingdoms*, stand at the physical center of *Newton’s Secrets* and also at the conceptual center of his thought. Newton wrote a tract on “the length of the sacred cubit of the Jews,” because the measurement was crucial in determining the precise dimensions of the Temple, which themselves revealed the hierarchies and harmonies of the universe. The fire of the burnt offerings on the Temple altar, however, was a figure not only of the Copernican sun, but also of the Son of Man. According to Newton’s idiosyncratic interpretation, John’s apocalyptic prophecies of the Son were all set within the Temple precinct. For Newton, in phrasing which suggests a poetic and not a scientific temperament (certainly more like John Donne than any contemporary physicist), the eternal flame of the Temple represents “the lawful son of the sun and the true son of nature”—the vital and illuminating principle infusing all matter. All space and time converge in the Temple. The past of the ancients and the future apocalypse are present in Temple architecture; the alchemical quintessence in the altar fire represents what would become in the *Opticks* the universal principle, that “cosmic ether,” the cause of gravity.

In *Newton’s Secrets*, the Temple of God is the place where theology and science come together, where the physical resounds with the spiritual—affirming that the secrets of the great mathematician and physicist, like the secrets underlying the modernity for which he has so often been credited or blamed, have their origins in Jerusalem.

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