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Telescopes, Microscopes, and the Problem of Evil

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Astronomers of the late seventeenth and early eighteenth centuries found themselves for a while at the center of an alignment of scientific, cultural, and religious curiosity. Theirs was an endeavor embraced by significant segments of the established churches of England and Ireland who supported the founding of scientific societies in both countries and who drew on their network of contacts with continental Protestants to keep abreast of current developments abroad. In England, for example, works such as the Reverend William Derham’s Astro-theology drew on mounting evidence that the universe might well be far larger than could be imagined to raise the possibility that life, for so long thought only to be on the level of the observable, in fact was infinite in scope. At the opposite end of the scale, Anton Van Leeuwenhoek in the Dutch city of Delft was making startling discoveries with the microscope that reinforced the pioneering work Robert Hooke had detailed in studies such as Micrographia. Van Leeuwenhoek’s observations,

1. I would like to thank Richard Kleer of the Department of Economics at the University of Regina for his thoughtful reading and comments on a late draft of this article.
2. William Derham, Astro-theology: or, A Demonstration of the Being and Attributes of God, from a Survey of the Heavens Based on the Author’s Observations by Means of “Mr. Huygens’ Glass” (London, 1714).
communicated to the Royal Society in London, revealed a teeming microscopic world so stunning that the Society at first refused to accept his reports on cells. The Dutchman at length prevailed on the Society to commission a team to review his work. Among those asked by the Society to review Van Leeuwenhoek's work were Alexander Petrie, minister to the English Reformed Church in Delft; Benedict Haan, at that time Lutheran minister at Delft; and Henrik Cordes, then Lutheran minister at The Hague. That Petrie, Haan, and Cordes were part of the team sent to review Van Leeuwenhoek's work speaks to the coexistence of scientific inquiry into new realms of knowledge with a religious mind-set independent of, but sympathetic to, the possible implications.

Derham was the rector of St. Laurence's in Upminster, Essex. Two years after the publication of Astro-theology, he was appointed canon of Windsor and thus became a member of the ecclesiastical body of St. George's Chapel at Windsor Castle, the chapel of the Order of the Garter and a royal peculiar whose members were exempt from episcopal oversight and were, in theory, answerable only to themselves and the monarch. Derham's appointment to Upminster suggests connections

4. The extent of the correspondence between Leeuwenhoek and the society can be seen in a series of letters gathered and bound in London with the title Letters to the Royal Society, Extracted from Issues Published between 1673 and 1685. The contents include letter 94: "A specimen of some observations made by a microscope"; letter 106: "Microscopical observations ... about blood, milk, bones"; letter 117: "Microscopical observations ... concerning the optic nerve"; letter 160: "Abstract of a letter ... concerning scales within the mouth"; letter 165: "Letter ... containing observations about the cristallin humor of the eye"; letter 168: "Abstract of a letter ... concerning the parts of the brain of several animals"; letter 173: "Abstract of a letter ... concerning the various figures of the salts contained in several substances"; letter 174: "Abstract of a letter ... concerning generation by an insect;" accessed March 28, 2013, http://search.lib.unc.edu/search?R=UNCb3174649. Leeuwenhoek was elected a fellow of the society in 1680.

5. Today, Upminster is the eastern terminus of Transport for London's District Line. Derham succeeded a rector appointed by the Halke family, who would seem to have acquired the right to presentation from their relative William Harvey, discoverer of the circulation of the blood. Presentations in 1662 and 1679 were made by members of the Halke family. I have been unable to determine if there was a Harvey/Halke connection to Derham's presentation in 1688, but it seems likely. Accessed October 23, 2012, http://www.british-history.ac.uk/report.aspx?compid=42831.

6. Biographies of Derham tend to refer to his "election" as canon of Windsor, but then and now "appointment of Canons ... is by Letters Patent issued by the monarch, so ultimately it [was] the Sovereign's decision. Whether or not Chapter had any involvement
to the family of William Harvey, discoverer of the circulation of the blood, and his appointment as canon of Windsor indicates a degree of royal approval for the intermingling of religious and scientific activity. In addition to his astronomical work, Derham developed an extensive holding of insects, published daily weather reports for Upminster for several years, and experimented with barometric pressure readings to try to ascertain their relation to weather. As part of his meteorological work, he contributed to the discussion of the "Great Storm" of November 26–27, 1703, recording the lowest barometric pressure reading of the event. From Delft, Van Leeuwenhoek offered his recordings of the phenomenon. Derham was elected a fellow of the Royal Society in 1702 and made the first reasonably accurate measurements of the speed of light. In short, he was the embodiment of the royalist, scientific, conforming clergyman who represented both a validation of the post-1688 settlement and an affirmation of the continuity of the church's engagement in both religious and social activity.

This sympathetic alignment of science and faith presented Anglican theologians familiar with such works the opportunity to secure the underpinnings of their faith by demonstrating its compatibility with worlds both greater and smaller than had ever before been seen. Perhaps the most effective demonstration of the ends to which such observations could be put came from the pen of the man who would end his career as archbishop of Dublin, William King, who recognized in the emerging stream of data a means to tackle perhaps the greatest conundrum of monotheistic religion: the nature of evil. Then, as now, the issue was how to reconcile an omniscient, omnipotent God with apparent imperfections in both society ("moral evil"—willful acts of human beings, such

\*in the nomination of candidates at that period is something we are currently investigating, but I am afraid we do not have an answer yet." Personal correspondence with Eleanor Cracknell, Assistant Archivist, St George's Chapel Archives and Chapter Library, October 26, 2012.


8. I am aware of the anachronistic nature of the word Anglican in this article, but it is surely easier than referring each time to "the Church of England and the Church of Ireland" when I am referring to doctrine held in common.
as murder or theft) and nature ("natural evil"—famine, storms, etc.). The "big" question was whether such evils exist as evil, in which case the efficacy of God's creation is up for debate, or whether such evils do not in fact exist but are indicative of failures in human understanding, which raises the question of the reason for God's creation of an imperfect human condition. The result of King's labors, De origine mali, received significant attention in Germany and France and had an immediate impact in Britain. At least as important, both De origine mali and King's companion piece, Divine Predestination and Fore-knowledg, were greeted not as rarified theological expositions but as part of a broad cultural embrace of the idea that life existed on a scale, both great and small, previously only imagined in literature.

Derham's call in Astro-theology for consideration of a "new system" consisting of a plurality of worlds, each containing a central star orbited by planets, owed something to previous works published elsewhere in Europe. One of those had first appeared in English in 1698 and came with a British royal imprimatur. It was Christiaan Huygens's The Celestial Worlds Discover'd. Huygens, a Dutch polymath who had been secretary to William of Orange, is better remembered for his work on probability theory, but his interest in optics was significant, and he was one of the

9. William King, De origine mali (Dublin, 1702). The first English translation is referred to throughout this article: Essay on the Origin of Evil by Dr. William King, Late Lord Archbishop of Dublin. Translated from the Latin, with Large Notes; Tending to Explain and Vindicate Some of the Author's Principles Against: The Objections of Bayle, Leibnitz, the Author of a Philosophical Enquiry Concerning Human Liberty; and Others, trans. Edward Law (London, 1731) (hereafter cited as Essay). Strengthening the connection between the theologian and social philosophers, Law's translation appeared with an introductory thesis by the clergyman John Gay, a cousin of the more famous poet of the same name, titled Concerning the Fundamental Principle of Virtue or Morality. For more on the contemporary responses to the work, see Hermann J. Real, "Conversations with a Theodicist: William King's Essay on the Origin of Evil, with Some Sidelights on Hobbes, Milton, and Pope," in But Vindicate the Ways of God to Man: Literature and Theodicy, ed. Rudolf Freiburg and Susanne Gruss (Tübingen, Germany: Stauffenburg, 2004), 85–112.

10. William King, Divine Predestination and Fore-knowledg, Consistent with the Freedom of Man's Will. A Sermon Preach'd at Christ-Church, Dublin, May 15, 1709 Before His Excellency Thomas Earl of Wharton, Lord Lieutenant of Ireland, and the Right Honourable the House of Lords (Dublin, 1709).

astronomers who began to unravel the nature of the rings of Saturn. He also discovered one of its moons, Titan, and became increasingly interested in the plausibility of extraterrestrial life. Separately from the Royal Society's delegation, Huygens conducted his own experiments replicating Van Leeuwenhoek's observations of cellular life.

Literature had long anticipated Derham, Huygens, and the Frenchman Bernard le Bovier de Fontenelle, who wrote *Entretiens sur la pluralité des mondes*—a book King had in his library. Cicero's *De re publica* presents a complex cosmology in book six, *Somnium Scipionis*, wherein Scipio ascends into the heavens and observes, "The earth itself seemed so small to me that I felt ashamed of our empire, whose extent was no more than a dot on its surface." C. S. Lewis reminds us that "this passage was constantly in the minds of succeeding writers. . . . It was part of the moralists' stock-in-trade." Boethius's *Consolation of Philosophy*, Dante's *Divine Comedy*, and John Milton's *Paradise Lost* all depend on a universe far more complex than contemporary astronomy offered them. Milton describes the Earth as "this punctual spot" (8.23) and "of smallest Magnitude" (2.1053).

That the Church of Ireland was as engaged in this same synthesis of faith, reason, and literature as its English counterpart should have come as no surprise. Puritan England had seen a chaotic, largely unfettered argument within a broad, Protestant consensus, but Cromwellian Ireland had been far more alarming for all, with sect after sect taking to print to state its case, often advocating a violent rejection of both "false doctrine"

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14. Ibid., 89.

and civil authority. As far as the Church of Ireland was concerned, matters were little improved after William III's victory re-emboldened the Presbyterians to again espouse their tenets of faith, culminating in John Toland's *Christianity Not Mysterious*. That the Irish parliament ordered the book burned did not, as far as several leading Church of Ireland clerics saw it, lessen the need to answer Toland's claims, and various attacks specifically on Toland appeared in Dublin. Doctrinal assaults aside, the Church of Ireland sought more comprehensive responses to Toland's ideas, recognizing, in part, that appeals to doctrine alone provided a rhetorical framework with its own built-in complications. The Irish layman Robert Boyle had sufficient sense to recognize the practical benefits of trusting that a broader religio-scientific response would be sufficient to answer the claims of Toland and his ilk. Boyle's bequest establishing the lecture series that bore his name stipulated that the series seek "to prove the Christian religion against notorious Infidels, Theists, Pagans, Jews and Mahometans, without descending to any Controversies that are among Christians themselves."

The matter of the size and nature of the universe meshed with microscopic observation to offer a means to address what had hitherto been a conundrum that seemed to preclude rational extrapolation. The argument of the church fathers was that part of God's essence is his creation. It would seem to follow that God, being infinite, must have the capacity to create an infinite range of things, both animate and inanimate. Until recently, however, God's creation had seemed to have been limited to a distinctly human scale, raising the absurd possibility that the power of his creation was, in fact, limited to a particular range of size. Prior to discoveries of microscopic life and increasing evidence

of astronomical complexity, the best solution to the argument was that God had created all that was necessary for his own works. However, this suggested some sort of limitation either to God's creative powers or to his ambition, and neither was a particularly satisfactory outcome. This intimation of limitations on God's part played into the traditional paradox that if God were omniscient he would not have created anything that would permit of evil in the world. This left the problem of evil susceptible to claims that evil was in some sense inherent in God's act of creation, that evil was a constituent aspect of God. Various Christian heresies had developed as a result of this line of thought, and until the tail end of the seventeenth century the only possible response to that challenge was the observation that God was unknowable. Recent observations were filling in the void at both micro- and macroscopic levels and seemed increasingly to indicate a dynamic system that offered new ways of understanding old problems. For Anglican theologians and scientists, this relatively sudden and dramatic filling of the void, at both ends of the scale, offered something exhilarating: the opportunity to demonstrate that their faith embraced the idea of a plurality of worlds teeming with life and evidence of God's creation.

The vicar of Laracor and dean of St. Patrick's Dublin, Jonathan Swift, demonstrated one rhetorical approach to combining faith and observation in perhaps his most charming surviving sermon, "On the Trinity," which directly addresses the very first article of religion of the Church of Ireland. He opens with a typically blunt guide to what his sermon is about:

This day being set apart to acknowledge our Belief in the Eternal TRINITY, I thought it might be proper to employ my present Discourse entirely upon that Subject; and, I hope, to handle it in such a Manner, that the most Ignorant among you

19. Article 1, "Of Faith in the Holy Trinity," states, "There is but one living and true God, everlasting, without body, parts, or passions; of infinite power, wisdom, and goodness; the maker and preserver of all things both visible and invisible. And in unity of this Godhead there be three Persons, of one substance, power, and eternity; the Father, the Son, and the Holy Ghost." The Thirty-Nine Articles of Religion of the Church of England (and of the Church of Ireland) can be found at http://www eskimo com/~lhowell/bcp1662/articles/articles.html/.
may return home better informed of your Duty in this great Point, than probably you are at present.\textsuperscript{20}

The reason for such ignorance, Swift points out, is that the word \textit{trinity} is "not in Scripture, but was a Term of Art invented in the earlier Times to express the Doctrine by a single Word, for the sake of Brevity and Convenience."\textsuperscript{21} For Swift, this is an opportunity to get as close to theology and philosophy as he ever undertakes, and that he does so while sailing very close to Toland's waters in his advocacy of the individual's ability to rely on reason to understand the commands of faith underlines both his skill and confidence:

It must be allowed that every Man is bound to follow the Rules and Directions of that Measure of Reason which God hath given him; and indeed he cannot do otherwise, if he will be sincere, or act like a Man. For Instance, if I should be commanded by an Angel from Heaven to believe it is Midnight at Noon-day; yet I could not believe him.\textsuperscript{22}

 Nonetheless, the "Doctrine . . . as delivered in Holy Scripture . . . is very short, and amounts only to this, That the Father, the Son, and the Holy Ghost, are each of the God, and yet there is but one God."\textsuperscript{23} That some people were too obtuse or too willful to accept this led to the Arian heresy "revived in the World about an hundred Years ago, and continued ever since; not out of a Zeal to Truth, but to give Loose to Wickedness, by throwing off all Religion."

The solution, says Swift, is straightforward: Although God is [in Holy Scripture] expressed in three different Names, as Father, as Son, and as Holy Ghost . . . there is but one

\begin{footnotesize}
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\item Swift, "On the Trinity," 160.
\item Ibid., 161.
\item Ibid., 160.
\end{enumerate}
\end{footnotesize}
God. But this Union and Distinction are a Mystery utterly unknown to Mankind.

This is enough for any good Christian to believe on this great Article, without ever inquiring any farther: And this can be contrary to no Man's reason, although the Knowledge of it is hid from him.

Swift seeks to remind his congregation that obedience to God's revealed will is paramount in a world in which, nonetheless, "God did never command us to believe, nor his Ministers to preach, any Doctrine which is contrary to the Reason he hath pleased to endow us with." Reason here serves as a guide to the *via media* between the Marian tendencies of the Roman Catholic Church and the rejection of the Christian Mysteries as espoused by Toland. The argument that reason and faith can be mutually confirming is bolstered if a positive feedback loop can be demonstrated as new discoveries emerge. Swift's explication of the doctrine of the trinity serves as a precise demonstration of an absolutely orthodox approach to the nexus of science and religion rapidly embraced by the Anglican churches. Reason was not paramount, but it was a sufficient guide to understand how the wonders of God's works might be understood in light of what was being revealed by the works of reason through science.

George Berkeley, an Irish cleric more inclined than Swift to philosophical consideration of how to align faith, reason, and science, noted at about the time that Swift was considering the nature of the trinity that

To one who regards things with a Philosophical Eye, and hath a Soul capable of being delighted with the sense that Truth and Knowledge prevail among Men, it must be a grateful Reflection

24. Ibid., 162.

to think that the sublimest Truths . . . are now grown familiar to the meanest Inhabitants of these Nations.\textsuperscript{26}

Like Swift, Boyle, and Derham, Berkeley rejoiced in the convergence of Truth (with its implication of the divine) with knowledge derived from reason. Indeed, the more that knowledge could be disseminated even to the "meanest inhabitants," and the more it could be shown to be complementary to truth as revealed by the Bible, the more secure would be the justification of the two established churches' \textit{via media}. Berkeley, who would finish his career as bishop of Cloyne, proceeds to ask whether "the Mind of a Philosopher [can] rise to a more just and magnificent and at the same time a more amiable Idea of the Deity. . . . And yet [Jesus's language] is the language of Shepherds and Fishermen."\textsuperscript{27} It was a sentiment Swift echoed in his sermon on the trinity and wholeheartedly endorsed, most famously in his \textit{Letter to a Young Gentleman Lately Entered into Holy Orders}, wherein he warns against the "frequent Use of obscure Terms . . . than which I do not know a more universal, inexcusable, and unnecessary Mistake among the Clergy of all Distinctions."\textsuperscript{28} Berkeley's own philosophical treatises would draw heavily on questions of sight and scale, insights Swift would adopt in determining the relative heights of Gulliver, the Lilliputians, and the Brobdingnagians.\textsuperscript{29} But it was a more senior Irish cleric who embraced the lessons of the new observational sciences to tackle head-on a substantive matter so complicated that unraveling the answers threatened to dismantle the very framework not just of the Thirty-Nine Articles but of the Christian faith itself.

The question was hardly new: Why is there evil? But the answer William King, already a prominent member of the Dublin Philosophical Society, outlined was very much of its time, and almost breathtakingly

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  \item \textsuperscript{27} Ibid., 319.
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so. Indeed, in answering the question of the origin of evil King wrote himself into a position that required him also to consider the question of predestination and free will in light of Church of Ireland doctrine that had a stronger Calvinist streak than its English counterpart. Although the Church of Ireland took the predestination aspects of article 17 seriously, it had also to admit the existence of free will in order to distinguish itself from various Protestant sects. Both treatises rely on traditional theological tropes while drawing on recent scientific developments to justify church doctrine and seek to demonstrate that recent discoveries underscore the foundational strength of the Anglican churches.

King's remarkably generous theodicy, *De origine mali*, earned extensive commentary from Pierre Bayle and high praise from Gottfried Leibniz and directly influenced Alexander Pope's *Essay on Man*. New discoveries enabled by improvements in optics offered the possibility of an answer to that old puzzle of why there was so much "nothingness" in a cosmos created by an all-powerful divinity. It was an answer King seized on. Politically conservative and naturally cautious, King, in his analysis, is surprisingly optimistic. While acknowledging that part of the challenge confronting any theodist is that God's nature cannot, by definition, be known, King argues at some length that our God-given faculties are making the world increasingly


comprehensible and that it will, in time, be possible to know not the nature of God but the nature of God's creation. *An Essay on the Origin of Evil* was very much of its time; indeed, in his 1731 English translation of King's work, Edward Law, later bishop of Carlisle, adds a lengthy note referring the reader to *Spectator* 519 (October 25, 1712), in which Joseph Addison reflects, after reading de Fontenelle, that “[t]he Material World is only the Shell of the Universe . . . [and] it is amazing to consider the Infinity of Animals” now revealed on the micro level. “Infinite Goodness,” Addison suggests, “is of so communicative a nature that it seems to delight in the conferring of Existence upon every Degree of Perceptive Being.”\(^\text{32}\) Having read King and, of course, the various literary lights of his acquaintance, Pope reflects in his first epistle of the *Essay on Man* on “The Nature and State of Man with Respect to the Universe,” that “worlds on worlds compose one universe,” and asks us to

> Observe how system into system runs,  
> What other planets circle other suns,  
> What vary'd being peoples every star.\(^\text{33}\) (24–27)

That existence had now been identified on previously unimaginable scales and that deductive reasoning suggested it might yet be found to be “conferred . . . upon every degree of perceptive being” solved the problem of the apparent void in the creation of God. It was becoming clear through the microscope and the telescope that an infinitely powerful God had created an infinitely physical world. This was critical to King.

Early in the *Essay*, King spends some time exploring the connection between God's nature and his creation. From this, King concludes that the scale between perfection and nonexistence is infinite and populated at all degrees by created things. Indeed, King would seem to take to heart the implications of an infinite scale when he acknowledges the profoundly humbling probability, if not the certainty, that life is not anthropocentric: “Those . . . who urge the Unfitness of

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certain parts of the Earth for the Sustenance of Man . . . are oblig'd to prove that the Earth was made for the sake of Mankind only, and not of the Universe . . . . But this is absurd." 34 Addison would reflect on de Fontenelle's suggestion that such is the overwhelming abundance of life it is likely all other planets have life on them. Addison was not particularly interested in exobiology, but his suggestion that distant planets "should be furnished with Beings adapted to their respective Situations" leads him to reflect, as King had noted, that "there is an infinitely greater space and room for different Degrees of Perfection, between the Supreme Being and Man, than between Man and the most despicable Insect." 35

In both King and Addison, we see the last vestiges of the traditional "Great Chain of Being" argument about the relationship between God and man. 36 They were not alone, however, in rejecting the "chain" concept and preferring an image closer to something approximating a web of infinite gradation from the perfect center (God) to an infinite variety of life spread out across the vastness of space. Diverse and unimaginably variegated on both a micro- and a macroscopic level though life might be, God is not arbitrary, and "since it is proper that matter should be put into Motion, 'tis better that this should be done according to some certain Laws." 37 King's framing introduction to the Essay explicitly shares the motives of Newton and Boyle. Newton's laws of motion, the practicalities of which had been known for millennia, were not explained until the 1687 Philosophiae naturalis principia mathematica, wherein he observes that "Geometry does not teach us to draw . . . lines, but requires them to be drawn. For it requires that the learner should first be taught to describe these [lines] accurately, before he enters upon Geometry." 38 Newton makes

34. King, Essay, 106.
38. Isaac Newton, The Mathematical Principles of Natural Philosophy By Sir Isaac Newton. Translated into English by Andrew Motte (London, 1729), 8. All references are to
it clear in his preface that he considers his work philosophy rather than mechanics, expressing the

wish [that] we could derive the rest of the phenomena of Nature by the same kind of reasoning from mechanical principles. For I am induced by many reasons to suspect that they may all depend upon certain forces by which the particles of bodies, by some causes hitherto unknown, are either mutually impelled towards each other . . . or are repelled and recede from each other.  

He asserts that his intention is that where “philosophers have hitherto attempted the search of Nature in vain . . . I hope the principles here laid down will afford some light to that, or some truer, method of Philosophy.”

It was a challenge to which King would rise. To prove his point, King would draw not only on Newton but also on his Irish compatriot and a sometime collaborator with Newton, Boyle, who had relocated to England after declaring Ireland “a barbarous country, where chemical spirits are so misunderstood, and chemical instruments so unprocurable, that it is hard to have any Hermetic thoughts in it.” However that might have been, Boyle coined the term “chemical analysis” as we now use it while in Ireland and compensated for the lack of chemical instruments by studying anatomy with his friend Sir William Petty, who had his own remarkable impact on Ireland—and on cartography and surveying in general—by overseeing the Down Survey. Settled in Oxford, Boyle grew fascinated with the air pump and in 1660 published

this first English-language edition of the Principia. King owned the Latin original.
39. Ibid., 10.
40. Ibid.
41. Robert Boyle to Frederick Clodius (undated, likely between April and May 1654), qtd. in The Correspondence of Robert Boyle, ed. Michael Hunter, Antonio Clericuzio, and Lawrence M. Principe, vol. 1, Introduction and Letters from 1636 to 1661 (London: Pickering and Chatto, 2001), 165. Boyle continued throughout his life to derive significant income from his Irish estates. The list of Boyle's works in King's library is extensive, running to at least nineteen different titles. See Matteson with Barton, A Large Private Park.
42. For more on Petty, see Ted McCormick, William Petty and the Ambitions of Political Arithmetic (Oxford: Oxford University Press, 2010).
Even such an apparently mundane topic had religious implications, and it was while answering Francis Line, a Jesuit critic of the *New Experiments*, that Boyle made his first mention of the law that states that at constant temperature the product of the pressure and volume of an ideal gas is always constant; that is, that $PV = K$. Boyle's and Newton's laws offered precisely the type of evidence that underscored King's dictum that if "matter should be put into Motion, 'tis better that this should be done according to some certain Laws," a dictum that permitted the reassertion of theological "laws" delineated in the manner of Boyle and Newton.

Newton's "truer philosophy," and hence King's work, had, of course, a predecessor in Francis Bacon. Time and again, Bacon makes a connection between natural philosophy and theology. In *De augmentis scientiarum* he observes that "Sacred Theology is grounded on, and must be deduced from the Oracles of God; not from the light of Nature, or the Dictates of Reason," noting that the use of humane Reason in matters pertaining to Religion is of two sorts; the one in the explication and conception of the Mystery; the other in illuminations and Inferences derived from thence. . . . [For] God vouchsafeth to descend to the weaknesse of our capacity, so expressing and unfolding his Mysteries as they may be best comprehended by us.  

What Bacon brought to English religious discourse was the idea that "nature should be established as divine instead of satanic . . . that God has revealed himself . . . by means of two scriptures: . . . the written word . . . [and] through his handiwork, the created universe." Part of King's

46. Ibid., 470–1.
solution to the problem of evil lay in developing this idea of the divine in nature.  

King's *Essay* itemizes the varieties of natural evil, just as Bacon had done for the varieties of the sciences in *De augmentis scientiarum*. King's list of subheads that he will consider in turn offers a list that reads almost as a catalog of human inquiry as it stood at that time, albeit in an order that appears to defy logical sequencing: "generation and corruption," "animals and the variety of them," "death," "hunger, thirst, and labour," "propagation of the species, childhood, and old-age," "diseases, wild-beasts, and venomous creatures." In part, it is King's ability to develop the ideas implicit in recent discoveries of the vast "variety" of animals that permits him to do more than reiterate a version of the great chain of being. Instead, he draws on the increasing evidence of an infinite scale of existence to confirm through deduction ideas that had previously had to be accepted on faith alone. But King is careful, too, to warn against ignoring the guidance offered by faith, a not-so-veiled attack on Toland's recognition of a Christianity not mysterious. Such considerations lead King to the final substantive section, "concerning the errors and ignorance of man," which builds on the preceding exploration of the connection between nature, understood through science and human insight, and God, understood through theology informing science and human insight.

To address the question of moral evil, King returns to the wax problem of René Descartes, which he had earlier considered in his opening section. Admitting once again that "we acquire [knowledge] by the Senses" and reminding the reader that as "things [can be] very different internally [yet] have sometimes the same external marks," King acknowledges that "we must of necessity be often doubtful" of our perceptions. Nonetheless, such sensory perception is "no more to be avoided than [any] other kind of *Imperfection*," even though "an

48. Among the works of Bacon in his library, King had a copy of *Opera omnia* (Frankfurt, 1665). For more on the range of King's intellectual reach and curiosity, see Joseph Richardson, "William King—European Man of Letters," in *Archbishop William King and the Anglican Irish Context, 1688–1729*, ed. Christopher Fauske (Dublin: Four Courts Press, 2004), 106–22.


50. Ibid., 135.
imperfect Nature ... understands also imperfectly." This interpretation permits the possibility of a Baconian gambit and, indeed, might even be said to require such a move. King answers the objection that, if he wanted to, God could make everything clear to humankind with the caveat that this would be an "interruption of the course of Nature" and reduce his creation to nothing more than random chance, a logical impossibility. King reiterates the central significance of "the course of Nature" as proof of the coherence of God's design—a coherence required if one is to privilege the ability of human reason to be a guide to divine will—because he was writing at a time when science was "making clear" much of God's creation that until then had been hidden. True, such discoveries ran the risk of misinterpretation, but it was possible to "distinguish between those Errors which we fall into after our utmost diligence and application, and such as we are led into by carelessness, negligence, and a depraved Will." Errors of understanding "are to be reckoned among Natural Evils, and [are] not imputable to us: for they arise from the very State and Condition of the Mind of Man, and are not to be avoided." Such an interpretation allowed for the continuing work of science precisely because any errors of understanding were neither moral failings nor necessarily a challenge to the moral underpinnings of society. Scientific experiment and observation, said King, served the religious purpose sought by Bacon and Newton, and there was nothing that had been discovered that fell afoul of Swift's admonition that "God did never command us to believe, nor his Ministers to preach, any Doctrine which is contrary to the Reason he hath pleased to endow us with." Indeed, precisely because "an imperfect Nature ... understands also imperfectly" but could be informed by rational consideration, appropriateness of religious doctrine could be determined by its ability to mediate the twin poles of faith and observation.

Having addressed natural evil, King extends his consideration of the possibilities provided by experimental observation, reason, and

51. Ibid., 135.
52. Ibid., 136.
53. Ibid.
54. Ibid.
conscience to address the question of moral evil. Moral evils, he says, “are to be reckon'd among” those which “come upon us knowingly and in a manner within our Consent,” and “he must be esteem'd the cause of them, who knowingly and of his own accord, brings them either upon himself or others by a depraved or foolish choice.”

King begins his analysis of moral evil by considering the matter of “election”—that is, the matter of an individual’s ability to choose to act. Here, King returns to the ideas of John Locke, who had argued that “moral actions are only those that depend upon the choice of an understanding and free agent.”

Or, as Milton put it in Paradise Lost, even if God “foreknew, / Foreknowledge had no influence on their fault / Which had no less prov'd certain unforeknown,” which has the useful benefit of suggesting that free will is not at odds with God’s foreknowledge. Moral evil, ultimately, is a matter of choice, made in rejection of the laws of God and of nature as understood by us. What makes De origine mali ultimately so optimistic a work is its insistence that evil is not inherent in the universe; rather, as the increasing evidence of science illuminates, the nature of the universe so broadens our ability to know and understand the full tapestry of creation that it will be ever less likely that we might act in violation of the morally appropriate, just as the better ordered, and hence understood, a civic society becomes, so the less likely one is to want to act in violation of its laws.

In proposing his solution to the problem of reconciling free will and an omniscient creator, required if there is to be such a thing as “moral evil” rather than divine caprice, King asserts that “there are certain Powers, faculties and Appetites implanted in us by Nature, which are directed to certain Actions.” These “faculties and appetites” are the ones in which “our Happiness, if we have any, seems to consist” if we “proper[ly] exercise” them.

What follows draws on that great question of early-eighteenth-century Irish philosophy, “Molyneux’s problem,”

56. King, Essay, 149.
59. King, Essay, 172.
60. Ibid.
in which a blind man suddenly sees, a problem posed in response to Locke’s explanation of various recent discoveries in the field of optics. Sight does nothing, says King, but “perceive . . . Light, Colours, &c. and, upon the Removal of these, its Action ceases.” It has, therefore, no intrinsic benefit, and reason, not sight itself, is the appropriate means by which to understand what we see.

King developed the consequences of this insight by drawing on an example straight out of Molyneux’s other great preoccupation, the legal status of Ireland, an issue of great import, in particular, to the Church of Ireland, which claimed a national as well as theological justification for its position in Irish society. “It does not seem any more absurd for a Power to create an Agreeableness between itself and an Object, by applying itself to that Object,” King writes, “than for a Man to acquire a Right to a thing by occupying it,” underscoring the very practical connections men such as King sought to make between religion, science, and policy. Just as claims to the land by right of occupation, if held in accordance with the moral requirements identified by authors such as Hugo Grotius and Samuel von Pufendorf, enable one to better identify with and delineate the nature of that country, so we acquire “rights” to nature by discovering, identifying, and naming its increasingly varied parts. Thus does the toolbox grow by which humankind can better understand the relationship between God and

61. “A Man, being born blind, and having a Globe and a Cube, nigh of the same bignes, Committed into his Hands, and being taught or Told, which is Called the Globe, and which the Cube, so as easily to distinguish them by his Touch or Feeling; Then both being taken from Him, and Laid on a Table, Let us Suppose his Sight Restored to Him; Whether he Could, by his Sight, and before he touch them, know which is the Globe and which the Cube? Or Whether he Could know by his Sight, before he stretch’d out his Hand, whether he Could not Reach them, tho they were Removed 20 or 1000 feet from Him?” William Molyneux to John Locke, July 7, 1688, quoted in Marjolein Degenaar and Gert-Jan Lokhorst, “Molyneux’s Problem,” The Stanford Encyclopedia of Philosophy, accessed October 27, 2011, http://plato.stanford.edu/entries/molyneux-problem/#1.


63. Ibid., 174.

man: the greater the variety of experiences, the greater the ways of understanding God's creation.

King's many publications and his correspondence all indicate that narrative was a concept largely alien to him. During the debate over the plan to introduce a half-pence coin into Ireland (made famous by Swift's series of Drapier's Letters on the subject), King praised two treatises opposing the plan but reported not being impressed by those "printed before by some body, that calleth himself a Drapier, which were in a ludicrous and Satyrical Style." It is possible King's comments to Samuel Molyneux were designed to protect Swift, the person then calling "himself a Drapier"; but it is at least as likely that they reflect his genuine opinion of the author's talents. Admiring Addison's Cato, King admitted he had little to judge it against as he had read no other English play "this thirty years" past. It is a testament to the importance of its argument, then, rather than to its literary elegance, that De origine mali would not only receive attention from philosophers such as Berkeley, Bayle, and Leibniz but would also influence the philosopher Francis Hutcheson and thus inform the development of the sentimental school of philosophy and the flourishing of a later-eighteenth-century British literature of sentiment and sensibility.

Berkeley identified in King's interest in questions of perception and scale the inherent problem in relying on the material world, which must be known through perception, to provide insight into the actual state of the universe. Molyneux's problem and King's use of it further underscored the problematic matter of material that could only be known through perception. In the discourse between King and other theologians, Berkeley recognized that in failing to follow his logic to

65. William King to Samuel Molyneux, November 24, 1724, quoted in Matteson with Barton, A Large Private Park, xxxiv.
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its conclusion, namely, that "things" are dependent on perception, King had left his work subject to attack from those who would quibble with the specifics of his examples without regard for the validity of his conclusions. Berkeley's solution was to demonstrate that "material things [are] mind-independent things or substances" and that, therefore, as esse est percipi, it follows that "there are no such mind-independent things" we can perceive.

Perhaps underscoring the reasons for Berkeley's rejection of materialism, Hutcheson, who despite his dissenter credentials had received some protection from King in Dublin, bases his argument in An Essay on the Nature and Conduct of the Passions and Affections in part on King's use of the infinite scale of creation to support his assertion that our State is absolutely Good, notwithstanding a considerable Mixture of Evil. The Goodness of the great Author of Nature appears even in producing the inferior Natures, provided their State in the whole be absolutely Good: Since we may probably conclude that there are in the Universe as many Species of superior Natures, as was consistent with the most perfect State of the whole.

68. In particular, the debate between King and Peter Browne underscored for Berkeley the inherent failings of a materialist foundation. King and Browne agreed on the conclusion but differed bitterly about the nature of the evidence. Berkeley, who likewise shared their conclusion, recognized that their dispute arose from a mutual failure to grasp the immaterial nature of the world. For more on King, Berkeley, and Browne, see David Berman, George Berkeley: Idealism and the Man (Oxford: Oxford University Press, 1994), esp. 147-52; see also Paul J. Olscamp, "Peter Browne, Berkeley and the Deists," in The Moral Philosophy of George Berkeley, International Archives of the History of Ideas, vol. 33 (The Hague: Nijhoff, 1970), 204-22.


De origine mali provided the foundational work for a distinctly Anglophone eighteenth-century political and moral science based on the juncture through perception of a divinely inspired moral sentiment and an experiential worldview. Another influential British reaction to King's work would come from John Wesley, who misinterpreted King's understanding of the role of observational science in developing his own, perhaps less optimistic, explanation of the origin of evil, but who came over time to appreciate the distinction between natural and moral evils.  

While the work of Hutcheson and like-minded philosophers became the dominant perspective of mid-eighteenth-century Britain, literature, too, began to explore the implications of the worldview of De origine mali. One clear example can be seen in the work of Laurence Sterne, a native Irishman; long-serving vicar of Sutton-in-the-Forest, Yorkshire; and sometime preacher at York Minster, the very title of whose A Sentimental Journey Through France and Italy speaks to its ethos. In his great novelistic exposition of sentiment, Tristram Shandy, Sterne offers an extensive demonstration of the connections between sentiment, perception, and morality, including a sermon on the subject of trust. The sermon takes as its theme Hebrews 13:18: "Pray for us: for we trust we have a good conscience, in all things willing to live honestly." Yorick, speaking for Sterne, argues that

[i]f a man thinks at all, he cannot well be a stranger to the true state of this account;—he must be privy to his own thoughts and desires;—he must remember his past pursuits, and know certainly the true springs and motives, which, in general, have governed the actions of his life. . . . In other matters, we may be deceived by false appearances; and as the wise man complains,

hardly do we guess aright at the things that are upon earth, and with labour do we find the things that are before us. But here the mind has all the evidence & facts within herself.

Even if, as Yorick suggests, “the mind has all the evidence . . . [about herself] within herself,” there remains the problem that while “one can be mistaken in one’s beliefs,” the really important question, as a late-twentieth-century novelist puts it, is whether it is possible to be mistaken about one’s beliefs. If a person believes himself to exist, then he cannot be mistaken. But if a person claims not to believe in his own existence, how are we to respond to this? . . . Is he wrong in imagining himself to have such a belief?

King had identified the solution to this problem by seeking to connect ideas of moral conduct with experiential evidence. It is this reliance on thought and perception that underscores Berkeley’s concerns about the materialist underpinnings of King’s work, but at the same time, Yorick, perhaps anticipating such a query about the individual understanding of one’s own ideas, admonishes his congregation to focus on practical matters and remember this plain distinction, a mistake in which has ruined thousands,—that your conscience is not a law:—No, God and reason made the law, & have placed conscience within you to determine [it].

73. Wisdom 9:16—an interesting choice as the Book of Wisdom (or the Wisdom of Solomon) is extracanonical and more often cited in Roman Catholic than in Anglican tracts.
75. Andrew Crumey, Pfitz (Sawtry, UK: Dedalus, 1995), 85. This is a question that underpins the subsidiary plot in the episode “My Lucky Charm” of the television show Scrubs. Jerry is a patient with Cotard Delusion, or walking-corpse syndrome, who believes he is dead even though he is walking around and talking to patients and doctors. Mike Schwartz, “My Lucky Charm,” in Scrubs, season 4, episode 14, directed by Chris Koch, aired January 25, 2005, (New York: NBC).
76. Sterne, Tristram Shandy, 155.
Sterne here seeks to ignore the argument between King and Berkeley, preferring to focus on the point King had made in distinguishing natural and moral evil in his admonition that “God and reason” together provide the means for recognizing the moral choices that must be made. While one component in that duality is ineffable, the other is eminently testable through observation and experimentation. Together, as for Bacon and King, they make the law that conscience helps us live by. The test of reason is its compatibility with faith; the test of faith is that its parameters can be extrapolated from reason. The role of conscience is to check that neither faith nor reason is advanced at the expense of the other.

Although the Essay attracted significant attention on its own merits, King did not find it necessary to answer his critics, at least in part because he was aware that, having addressed the problem of evil with a solution that posited the existence of free will, he had obliged himself to address the problem of salvation, which the Church of Ireland identified as essentially predestined. King would offer his solution in a sermon preached before the Lord Lieutenant of Ireland and the members of the Irish House of Lords in 1709 and published immediately thereafter as Divine Predestination and Fore-knowledg, Consistent with the Freedom of Man's Will. In this companion piece to De origine mali, we can see further demonstrations of King's enthusiastic and reassured embrace of science to underscore the validity of his faith. What King intended to do, he told his audience, was

to lay before you that which I take to be the edifying part of the Doctrine of Predestination; and in such a manner . . . as to avoid every thing, that may give occasion to ignorant or corrupt Men to make an ill use of it. 77

This admonition against “ignorant or corrupt Men” who might “make an ill use” of King's doctrine harks back to the definition of moral evil as an action deliberately chosen. King undertook his examination of free will in the same spirit as he had De origine mali, sure that we could deduce something of God from “Observations we have made of his

77. King, Divine Predestination, 4.
Works, and from the Consideration of those Qualifications, that we conceive would enable us to perform the like."  

The sermon's rhetorical style adheres to an Anglican tradition exemplified by the advice of John Wilkins, bishop of Chester, who had called in his 1646 treatise *Ecclesiastes, or, A Discourse Concerning the Gift of Preaching* for a style "plain and without rhetorical flourishes."  

Dense though King's work can at times appear, the archbishop would seem to have been striving to honor his own admonition against those Philosophers [who] ... being either puff'd up with the Vanity of appearing wise above the Vulgar, or impos'd upon by their own Subtilty, often frame Monsters of their own . . . : while they are striving to pursue Truth thro' Coverts impervious and inaccessible to human Wit, they leave her behind their Backs, and are blind in full Light.

Wilkins's example might well have appealed to King for one other reason: he had been instrumental in the founding of the Royal Society and had been its first secretary. In that capacity, Wilkins had encouraged the work of a young graduate of Leiden University, Nehemiah Grew, son of a Nonconformist minister and the author in 1670 of a work made possible only because of the microscope, *The Anatomy of Vegetables Begun*, which Wilkins brought to the Society's notice and to whom it was dedicated. The next year, at Wilkins's recommendation, Grew was elected a fellow. It was Grew who was asked by the Society to replicate Van Leeuwenhoek's discovery of cells. Wilkins himself had been pondering the implications of the discoveries being made through the telescope as early as his 1640 treatise *A Discourse Concerning a New World and Another Planet*, in which he observes that

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78. Ibid., 5.  
it were happy for us if we could exempt Scripture from Philosophicall controversies: if we could bee content to let it bee perfect for that end unto which it was intended, for a rule of our Faith and Obedience; and not stretch it also to be a judge of such naturall truths, as are to be found out by our owne industry and experience.  

What could be found out by human endeavor could still be wonderful, as Van Leeuwenhoek’s work had demonstrated. “Indeed,” wrote Samuel Hoole in his introduction to his translation of many of Van Leeuwenhoek’s papers, “the extreme minuteness of many of the subjects on which he treats, is in some instances beyond the reach of our capacities to comprehend, although we may be fully assured of their existence.”  

Hoole then makes a reference to the Spectator, in this case number 420, which was itself adapted from a longer essay of Addison’s “On the Pleasures of the Imagination,” in which it was observed that “we may yet . . . discover in the smallest particle of this little world, a new inexhausted fund of matter, capable of being spun out into another universe.”

Wilkins’s sentiments are echoed by King near the opening of the sermon, where he acknowledges that on the subject of free will and predestination “Learned Men have engag’d with the greatest Zeal and Fierceness . . . and the Disputes have prov’d so intricate, that the most diligent Reader will perhaps . . . be but little satisfy’d, and less edify’d, by the greatest part of all that has been written.” For King, as for Wilkins, Derham, and other scientists and philosophers who were also clerics, all these troubles could be reconciled if only people would recognize that faith without reason was at best ill informed and that reason without faith was morally enervating. Justification of either lay in the evidence of the other. In explicating the means by which free

82. John Wilkins, A Discourse Concerning a New World and Another Planet (London, 1640), 19–20.
85. King, Divine Predestination, 3.
will and predestination can be shown to be compatible, King this time looks not at the microscopic but instead to the vastness of the universe, which allows him to base his argument on a consideration of the smallness of humanity’s grasp of the whole. In deploying what David Berman identifies as “the representative theory of perception,” King supposes that our perception of the physical world involves three terms: (1) the mind, (2) its immediate experiences, called ideas or perceptions, and (3) the physical object and its qualities.  

He reiterates an argument made in *De origine mali* that an object does not necessarily contain the experience that it triggers: ice makes us feel cold not because it is cold per se but because of the experience—the perception—that our mind interprets as “cold.” Perception tells us only a very small thing about the object being experienced, perhaps enough to react intelligently to the presence of the object as we should. A tiger charging toward us does not itself contain fear; we experience fear within ourselves and so flee (if all goes well) before the attributes inherent in the tiger cause us to be eaten.  

Although the representative theory of perception offers a strategy to help understand the physical world, unless one sides with Berkeley in rejecting materialism as mistaking perception of a thing for knowing the thing, King also uses it as an analogy for how we might grasp at least the edges of the divine, equating the three terms identified earlier with their religious counterparts:

(1) the mind, (2) what it knows of God’s attributes, and (3) God’s attributes as they are in God. . . . King supposes that (3) is known through (2) and that (2) represents (3). And King also tends to see a causal relationship between (3) and (1), which is productive of (2). 

The challenges provided by the potential lack of relationship between what is sensed and the thing sensed underscore that

87. Ibid., 126.
the Nature and Perfections of God, as he is in himself, are such, that it is impossible we should comprehend them, especially in the present State of Imperfection, Ignorance and Corruption, in which this World lies. He is the Object of none of our Senses, by which we received all our direct and immediate perceptions of things; and therefore if we know any thing of him at all, it must be by Deductions of Reasons, by Analog and Comparison.88

So it is, says King, that to assume foreknowledge is "inconsistent with . . . Free-Will . . . is the same Absurdity as it is to conclude, that China is no bigger than a Sheet of Paper, because the Map, that represents it, is contain'd in that Compass."89 "All maps are imperfect; this is the sadness of maps,"90 but this sadness is critical for King because it once again allows him to draw on Molyneux's problem. For all our knowledge, deductive reasoning, and analytic skills, we have, in effect, the same relationship to God as a blind man has to color, and yet, like the blind man, we can make sense of the ideas that

Light and Colours are but Effects . . . and that there are no such Things at all in Nature, but only in our Minds; of this at least we may be sure, that Light in the Sun or Air, are very different Things from what they are in our Sensations of them, yet we call them both by the same Names. . . . And yet strictly speaking, it is certain, that which in the Sun causes the Conception of Light in us, is as truly different in Nature from the Representation we have of it in our Mind, as our Fore-knowledge, is from what we call so in God.91

Aware that "there is [a] great difference between the Analogical Representations of God" and comparable analogies of the natural world, King reflects that this need not obviate his methodology:

Whereas in ordinary figurative Representations, the thing express'd by the Figure, is commonly of much less moment

88. King, Divine Predestination, 10.
89. Ibid., 11.
91. King, Divine Predestination, 18.
than that to which it is compar’d, in these Analogies the Case is otherwise, and the things represented by them, have much more Reality and Perfection in them, than the things by which we represent them. Thus weighing a thing in our Minds, is a much more noble and perfect Action, than examining the Gravity of a Body by Scale and Balance . . . and yet if we reason from them by Analogy and Proportion, they are sufficient to give us such a Notion of God’s Attributes, as will oblige us to fear, love, obey, and adore him.  

To underscore his point as the sermon nears its conclusion, King revisits mathematics and reflects on the fact that although it “seems inconceivable” that a negative integer multiplied by a negative integer should be positive . . . yet if the most Ignorant will but have patience, and apply themselves for Instruction to the Skilful in these matters, they will soon find all the seeming Contradictions vanish . . . [and see] that the Assertions are . . . plain and easy Truths . . .

Ought we not then to suspect our own Ignorance, when we fancy Contradictions in the descriptions given us of the Mysteries of our Faith and Religion?

Perhaps we should, but we ought not, says King, deny the evidence of such “plain and easy Truths” as can be made out with the aid of a microscope, a telescope, and God-given reason.

The discovery of teeming multitudes of life at the microscopic and macroscopic levels and an expanding universe had excited the minds of more people than Derham, Addison, and de Fontenelle. As King demonstrated in his two monumental works of theology, reasonable deduction from the mass of newly discovered evidence could help secure faith. More than that, the compatibility of science and faith—the ability of each to reinforce the logical and empirical foundations of the other—underscored the claims that the Churches of Ireland and England were more than mere political creations.

92. Ibid., 22–23.
93. Ibid., 29–30.
Anglican laymen and clerics could look to science to justify their faith and to their faith to justify their scientific endeavors.