4-1-2002

Original Sin and the Problem of Knowledge in Early Modern Europe

Peter Harrison
Bond University, peter.harrison@uq.edu.au

Original Sin and the Problem of Knowledge in Early Modern Europe

Peter Harrison

> It is not the philosophy received from Adam that teaches these things; it is that received from the serpent; for since Original Sin, the mind of man is quite pagan. It is this philosophy that, together with the errors of the senses, made men adore the sun, and that today is still the universal cause of the disorder of men's minds and the corruption of men's hearts.
>
> Nicolas Malebranche[1]

In his *Éloge du Pere Malebranche*, delivered to the Parisian Academy of Sciences on 22 April 1716, Bernard Fontenelle recounted the story of Nicolas Malebranche's somewhat controversial conversion to Cartesianism. When friends and colleagues had taken him to task over his new-found commitment to the doctrines of Descartes, Malebranche responded with this question: "Did Adam have the perfect science?" It was agreed that this was the common view. Malebranche responded that he, too, aspired to the perfect science, and that his quest for this knowledge could not be satisfied by following the historical or critical pursuits of his colleagues, but by adopting the procedures set out by Descartes.[2] For Malebranche, the Cartesian method offered a means of overcoming the limitations of the fallen intellectual faculties of Adam's seventeenth-century descendents, and thus of restoring the fabled encyclopedic knowledge of the first man.

[1] Malebranche, *Search after Truth*, VI.ii.3, tr. and ed. Thomas M. Lennon and Paul J. Olscamp (Cambridge, 1997), 451.

[2] Malebranche, *Oeuvres de Malebranche*, ed. A. Robinet (20 vols.; Paris, 1958-68), XIX, 1000.

Aspirations to recover the science of Adam provided a common motivation for a number of early-modern philosophical projects. Earlier in the seventeenth century Francis Bacon had famously observed in his *Novum Organum* (1620) that the human dominion over nature which Adam had lost at the Fall could be restored in some measure by the sciences: "For man by the fall fell at the same time from this state of innocency and from his dominion over creation." The moral losses of the human race were to be restored in some measure by "religion and faith"; Adam's lost knowledge, and the dominion which it made possible, by "arts and sciences."[3] Bacon's vision of a reconstructed knowledge of nature during the period which he regarded (somewhat prematurely) as "the last times" clearly played an important role in legitimizing the goals and methods of the new natural philosophy. Indeed the program of the Royal Society of London from its inception in 1660 explicitly relied upon a Baconian rhetoric of the restoration of that human knowledge and dominion over nature which Adam had once enjoyed.

While historians such as Charles Webster have alluded to the ways in which the myth of an original perfect philosophy motivated projects for the advancement of learning in a rather general way, little attention has been paid to the manner in which early-modern views of the nature of the original fall from knowledge directly informed the methods of the new sciences, determined the scope of their enquiry, and provided ammunition for use against traditional learning.[4] Moreover, most commentators, following Webster's lead, have restricted their attention to Francis Bacon, and to the Baconian aspirations of subsequent reformers of knowledge in seventeenth-century England. In this paper I shall suggest that the biblical narrative of the Fall played a far more direct role in the development of early modern knowledge—both in England and on the Continent—than has often been assumed, and that competing strategies for the advancement of knowledge in the seventeenth century were closely related to different assessments of the Fall and of its impact upon the human mind. While confirmation of this claim would require a more comprehensive study than space here permits, this paper will set out a number of preliminary considerations which establish the plausibility of such a thesis, showing how the biblical narrative of the Fall directly informed the epistemological projects of the seventeenth century, and prompted various rationalist and empiricist solutions.

[3] Bacon, *Novum Organum*, II.lii, in James Spedding, Robert Ellis, and Douglas Heath (eds.), *The Works of Francis Bacon* (14 vols.; London, 1857-74), IV, 247-48. Cf. *Valerius Terminus, Works* III, 222.

[4] Charles Webster, *The Great Instauration: Science Medicine and Reform, 1626-1660* (London, 1975).

The Mind of Adam

There was an almost universal consensus in the sixteenth and seventeenth centuries that the progenitor of the human race had enjoyed a greater facility in natural philosophy than any of his descendents. The locus classicus for this view was Genesis 2.19-20, which relates how Adam gave names to the animals. On the basis of this single verse, commentators from the first century to the eighteenth argued that our first father had possessed an encyclopedic knowledge of nature and its operations. The Restoration Divine Robert South provides a typical assessment:

> He came into the world a philosopher, which sufficiently appeared by his writing the nature of things upon their names: he could view essences in themselves, and read forms with the comment of their respective properties; he could see consequents yet dormant in their principles, and effects yet unborn in their causes; his understanding could almost pierce into future contingents, his conjectures improving even to prophecy, or the certainties of prediction; till his fall it was ignorant of nothing but of sin.[5]

While not all writers were as effusive in their estimates of Adam's abilities, it was widely acknowledged that Adam had possessed a better grasp of nature and its operations than anyone since.[6]

If there was widespread agreement on the superiority of Adamic science, there remained differences about the precise extent of his knowledge and how it had been acquired. Was his knowledge a function of superior mental capacities? Was it to be attributed to the acuity of his senses? Were the operations of nature more transparent before the Fall? Some saw a role for divine revelation in the perfect knowledge of Adam. Anglican Bishop Thomas Morton thought that Adam's knowledge was "not gotten by sense, experience, observation, and by his owne industry (and yet it was afterwarde to be encreased by this meanes) but engendered in his minde by the finger of God."[7] Others thought that Adam

[5] South, *Sermons Preached upon Several Occasions* (Oxford, 1679), 127-28.

[6] See, e.g., Luther, *Lectures in Genesis*, in *Luther's Works*, ed. J. Pelikan and H. Lehman (55 vols.; St Louis, 1955-75) (subsequently *LW*), I, 68, 120; John Calvin, *Commentary on Genesis*, 2.19, tr. and ed. John King (Grand Rapids, Mich., 1948), 131; George Walker, *History of the Creation* (London, 1641), 193; John Greene, *The First Man, or A Short Discourse of Adam's State* (London, 1643), 1; Nicholas Culpeper, *Complete Herbal* (Ware, 1995), vii.

[7] Thomas Morton, *A Treatise of the Threefold State of Man* (London, 1596), 222-23. See also R. Bostocke, *The Difference Between the Auncient Phisicke ... and the latter Phisicke* (London, 1585), Sig. Gi^{v}; John Parkinson, *Paradisi in Sole* (London, 1629), Epistle to the Reader; Ambroise Paré, *The Workes of that Famous Chirurgion Ambrose Parey* (London, 1634), Preface; Henry Cornelius Agrippa, *Of the Vanitie and Vncertainty of Artes and Sciences* (London, 1569), Sigs. 4^{r}, 186^{r}.

had been possessed of extraordinary senses. Martin Luther had suggested that before his Fall Adam "could have seen objects a hundred miles off better than we can see them at half a mile, and so in proportion with all the other senses."[8] Anglican Divine and Fellow of the Royal Society, Joseph Glanvill, speculated along similar lines that Adam's advantages over us lay "in the large extent of his Senses." "The acuteness of his natural Opticks" wrote Glanvill, "shew'd him much of the Coelestial magnificence and bravery without a *Galileo's* tube."[9] Adam could see "the motion of the bloud and spirits through the transparent skin," and could by sensible perception know the causes of things.[10] For Glanvill and other fellows of the Royal Society instruments and experiments were called for in order to "strengthen and rectify" the operations of the senses which had become "deceitful and fallacious" as a consequence of the Fall.[11]

The most common view, however, was that Adam's knowledge of nature had been made possible through the maintenance of the proper hierarchical relations amongst the various faculties of the mind—the will, reason, and imagination—and of the mind-body relation—the passions and the senses. Adam's virtual omniscience was thus the result of his faculties cooperating in the fashion in which their maker had originally intended. For this reason, psychological analyses of the Fall focused upon the breakdown of the proper harmonious relations which had once existed amongst these various faculties.[12] As theological writer George Burches expressed it: "For look how that parts and faculties both of Soul and body were ordered, and framed, and justified, and exercised in Righteousness: So likewise the same parts and faculties, both of Soul and body are confused, distempered, deformed, and perverted by iniquity and sin."[13] In much the same way that Adam had lost his dominion over the beasts, so too, in the inner world of the soul, reason had lost its control of the passions, which rebelled against their rightful master.[14] The Fall was thus supposed to

[8] Martin Luther, *Table Talk*, tr. William Hazlitt (Philadelphia, 1848), cxxviii; Cf. *Lectures on Genesis 1-5*, *LW*, I, 62; *Lectures on the Psalms*, *LW*, XII, 117. Cf. Morton, *Treatise*, 223; Henry Holland, *The Historie of Adam* (London, 1606), fol. 6. Also see Williams, *The Ideas of the Fall and of Original Sin* (London, 1927), 71-72.

[9] Glanvill, *The Vanity of Dogmatizing* (London, 1661), 1, 5.

[10] *Ibid*., 6-8.

[11] Glanvill, "Modern Improvements of Useful Knowledge," 23, in *Essays on Several Important Subjects in Philosophy and Religion* (London, 1676); Robert Hooke, *Micrographia* (London, 1665), Preface. For critical discussions of this view see John Locke, *Essay concerning Human Understanding* II.23.12, ed. P. Nidditch (Oxford, 1975), 302; Malebranche, *Dialogues on Metaphysics and Religion*, IV.xviii, ed. Nicholas Jolley and David Scott (Cambridge, 1997), 65, and *The Search after Truth*, 22, 580; Henry Power, *Experimental Philosophy* (London, 1664), Preface (Sig. a4^{r}).

[12] Glanvill, *Vanity of Dogmatizing*, 4.

[13] George Burches, *Mans Inbred Malady* (London, 1655), 17.

[14] Peter Harrison, "Reading the Passions: The Fall, the Passions, and Dominion over Nature," in S. Gaukroger (ed.), *The Soft Underbelly of Reason: The Passions in the Seventeenth Century* (London, 1998), 49-78.

have wrought havoc with the internal harmony of the human being, resulting not merely in a moral fall, but in a fall from knowledge and the ability to discover truth. Original sin, in short, consisted in both a propensity for moral wrongdoing and an inability to recognize truth.

The sixteenth and seventeenth centuries witnessed a renewed consciousness of the pervasive nature of original sin and of the severity of its effects. This was in no small measure the consequence of the Protestant Reformers' revival of the more severe Augustinian form of the doctrine. An integral part of this development was a renewed emphasis on the epistemological consequences of the Fall, again most prominent in Protestant writings.[15] However, this mood was also felt in Catholic countries. The skepticism of Montaigne and disciples emphasized the vanity of the human condition, and in the seventeenth century Catholicism experienced its own resurgence of Augustinian anthropology with the rise of Jansenism. In addition, Renaissance humanism and Reformation biblicism had combined to bring a renewed emphasis on the literal or historical sense of the biblical text. As a consequence, the narrative of the Fall was widely viewed not as an allegorical tale but a historical truth of enduring significance.[16]

Claims that the Fall had wrought havoc with the intellect were not restricted to theological works. Moral treatises and psychological works similarly deal with the propensity of fallen minds to arrive at erroneous conclusions. Thomas Wright claimed, in his influential *Passions of the Mind* (1601), that "the preuenting of reason" is chiefly the consequence of the intransigence of the passions—those "thorny briars sprung from the infected roote of original sin."[17] Philosophical discourses devoted to truth, error, and the possibility of genuine knowledge also locate the origin of human intellectual failings in Adam's sin. In *De la Sagesse* (1601), Pierre Charron declared that the mind, "corrupted and seased on by the force of the passions (or rather by the fall of our first father *Adam*) doth likewise perhaps corrupt the vnderstanding, and so from hence come the greatest part of our erroneous iudegments."[18] Sir Thomas Browne opens his catalogue of errors, *Pseudodoxia Epidemica* (1646), with the similar pronouncement that: "The first and father cause of common Error, is the common infirmity of humane nature."[19]

[15] See Martin Luther, *Lectures on Genesis: 1-5*, *LW*, I, 166; John Calvin, *Commentary on Jonah*, 1.5, tr. John Owen (Grand Rapids, Mich., 1950), 37, 38, *Commentaries on Ezekiel*, tr. Thomas Myers (2 vols., Grand Rapids, Mich., 1948), II, 5-44; *Institutes of the Christian Religion,* II.ii.12, ed. John McNeill (2 vols., Philadelphia, 1960), I, 270-71.

[16] Peter Harrison, *The Bible, Protestantism, and the Rise of Natural Science* (Cambridge, 1998), esp. 121-29, 205-11.

[17] Thomas Wright, *Passions of the Mind* (London, 1601), 2-3. See also Robert Burton, *Anatomy of Melancholy*, 1.1.1.1 ed. Thomas Faulkner et al. (3 vols., Oxford, 1989), I, 122; Edward Reynolds, *A Treatise of the Passions* (London, 1647), 483, 5-6.

[18] Charron, *Of Wisdom* (London, 1606), 63-64. Cf. Agrippa, *Vanitie and Vncertainty*, Sig. 186^{r}.

[19] Browne, *Pseudodoxia Epidemica*, I.i, ed. Robin Robbins (2 vols., Oxford, 1981), I, 5.

Considerations such as these explain why the epistemological projects of the seventeenth century tend to be preoccupied with error and the mistakes of the past, and commonly assume that avoidance of error is not merely a necessary condition for knowledge, but that it is sufficient.[20] The tradition according to which Adam was in possession of the perfect philosophy implies that human minds were originally designed to know the truth, and that once those impediments which followed upon the Fall had been identified and neutralized, the mind would once again, of its own nature, arrive at truth, or at least be better equipped to do so. A central feature of the Cartesian program, as expressed in the *Principles of Philosophy* (1644), was thus "to investigate the origin and causes of our errors and to learn to guard against them."[21] The subtitle of Malebranche's *Search after Truth* (1674-75) expresses a similar sentiment: "Wherein are treated the nature of mans' mind and the use he must make of it to avoid error in the sciences." A vital element in Malebranche's program was "to explain how we might conceive the order found in the faculties and passions of our first father in his original state, as well as the changes and disorder that befell him after his sin."[22] In *The Great Instauration* (1620) Bacon also made reference to the epistemological consequences of the Fall, expressing his desire that knowledge be "discharged of that venom which the serpent infused into it," and explaining his goal as "the true end and termination of error."[23] Joseph Glanvill had a similar prescription for the proper acquisition of knowledge: "And therefore besides the general reason I gave of our intellectual disabilities, The *Fall*; it will be worth our labor to descend to a more particular account: since it is a good degree of *Knowledge* to be acquainted with the *causes* of our *Ignorance*."[24]

Thus in the seventeenth century the standard pattern for positive proposals to advance knowledge was to begin with an analysis of the causes of error, and then attempt to show how the particular infirmities of the human mind which had resulted from the Fall could be redressed by the proposed procedures. Robert Hooke's justification for the methods of experimental philosophy neatly encapsulates this approach: "every man, both from a deriv'd corruption, innate and born with him, and from his breeding and converse with men, is very subject to slip into all sorts of errors…. These being the dangers in the process of humane Reason, the remedies of them all can only proceed from the real, the

[20] On the avoidance of error as sufficient for truth, see Thomas Lennon's introduction to Malebranche, *Search After Truth*, xii.

[21] Descartes, *Principles* 1, §31, in *The Philosophical writings of Descartes*, tr. John Cottingham, Robert Stoothoff, Dugald Murdoch, and Anthony Kenny (3 vols., Cambridge, 1984-91) [subsequently CSM], I, 203-4.

[22] Malebranche, *Search after Truth*, I.5 (p. 19).

[23] Bacon, *Great Instauration, Works*, IV, 20, 21.

[24] Glanvill, *Vanity of Dogmatizing*, 63; Cf. *Scepsis Scientifica* (London, 1665), 48.

mechanical, the experimental Philosophy."[25] Hooke's "mechanical and experimental philosophy," it need hardly be pointed out, was not the only solution proposed to overcome the inherent incapacity of fallen minds. Despite a general consensus about the limitations of the intellect and need to overcome its deficiencies, projects to overcome these shortcomings varied considerably. The priority accorded to proposed sources of knowledge—be it reason and innate principles and conceptions, or the senses, observation, and experimentation, or divine revelation through the scriptures or personal inspiration—were, as we shall see, intimately related to analyses of the specific effects of original sin. Of particular importance was the issue of whether Adam's fall resulted in the total corruption of his reason, or a less severe privation.

The Integrity of Reason and the Cartesian Project

A major point of contention in early-modern assessments of Adam's Fall and its cognitive effects was to do with the extent to which the faculties which Adam used to acquire knowledge were damaged. The Protestant reformers had typically tended to elevate the abilities of the prelapsarian Adam and stress the comparative depravity of the present human condition. Their negative appraisals of human cognitive powers were opposed to a long-standing scholastic view, according to which the natural perfections with which the human race had been originally endowed—including the powers of reason—had emerged relatively unscathed from the sorry episode in the Garden of Eden. The "natural gifts," wrote Thomas Aquinas, "remained after sin." Reason was one such natural gift. The "light of natural reason," Aquinas explained, "since it pertains to the species of the rational soul, is never forfeit from the soul."[26] What befell Adam after the Fall, was for Aquinas and his scholastic successors a privation only of supernatural powers, rather than a corruption of human nature. Subsequent developments in the theology of the Franciscans were even more dismissive of original sin, harking back to the more benign assessments of the nature of Adam's sin more typical of Church Fathers before Augustine.[27] The whole enterprise of natural theology, for which Aquinas' "five ways" is the classical model, was premised upon this optimistic view of the natural powers of the human intellect. Moreover, it was on this basis that the natural philosophy of the "pagan" writers, most notably Aristotle, was in principle acceptable to the medieval schools, for there was no reason to be suspicious of learning which had sprung from the exercise of natural and universal principles of reason. To be sure, Aristotle and the other ancients had known nothing of the divine will, nor of

[25] Hooke, *Micrographia*, Preface.

[26] *Summa theologiae* 1a 95. 1, Blackfriars edn., ed. Thomas Gilby (60 vols., London, 1964-76).

[27] See Williams, *Ideas of the Fall*, 410-14.

God's salvific plan; neither could they cultivate the supernatural virtues of faith, hope, and love. But these deficiencies, however crucial they might prove on the day of judgment, would not prejudice the accumulation of natural knowledge.

In his analysis of the sources of error, Descartes essentially adopted the terminology of the Thomists.[28] He defines ignorance as a privation, rather than a consequence of corruption, and founds the whole edifice of knowledge on the assumption that a clear idea of the Deity—the very image of God—could be discerned in the mind. In the *Principles of Philosophy*, where he speaks of the need to identify the errors to which the mind is prone and to guard against them, he points out that these errors do not originate from God: "Considered in relation to God they are merely negations, and considered in relation to ourselves they are privations."[29] In *Objections and Replies* (1641) he had already taken the empirically-inclined Gassendi to task on this question: "you assume incorrectly that our being liable to error is a positive imperfection." Instead, Descartes insists, errors are the result of "the negation of greater perfection amongst created things."[30] Descartes thus follows Thomas in holding that human proneness to error is a consequence of the privation of supernatural powers, rather than the active corruption of the natural powers of reason.

While the sources of error are mere negatives, it is reason, along with the image of God in the soul, which are the sources of truth. The human mind, Descartes claimed, had within it "a sort of spark of the divine, in which the first seeds of useful ways of thinking are sown."[31] The idea of God, from which Descartes famously derived God's existence, provides the guarantee of the veracity of human knowledge. Thus the Cartesian system was premised upon the assumption that both reason and the image of God in the soul were retained after the Fall.[32] It is these enduring and universal features of the mind which make possible acquisition of the perfect science. As Descartes himself expressed it: "it is very clear that the best path to follow when we philosophize will be to start from the knowledge of God himself and try to deduce an explanation of the things created by him. This is the way to acquire the most perfect scientific

[28] Thomistic philosophy had undergone a revival in the second half of the sixteenth century, and Descartes's education by the Jesuits at La Flèche would doubtless have ensured his familiarity with the teachings of St Thomas on this question. See Roger Ariew, "Descartes and Scholasticism: The Intellectual Background to Descartes' Thought," *The Cambridge Companion to Descartes* ed. John Cottingham (Cambridge, 1992), 58-90.

[29] Descartes, *Principles* 1, §31, CSM I, 203-4, 207. Definition repeated in "Letter to Regius," 24 May 1640, CSM III, 148.

[30] Descartes, *Objections and Replies*, CSM II, 258, cf. II, 218.

[31] Descartes, *Rules for the Direction of the Mind*, Rule IV, CSM I, 17. Cf. *Discourse* II, CSM I, 124; "Early Writings," CSM 1, 4.

[32] Descartes, *Meditations* 3.5, CSM II, 35; *Objections and Replies*, 5.372, CSM II, 256; *Principles of Philosophy*, §11, CSM I, 199.

knowledge, that is, knowledge of effects through their causes."[33] It is precisely these formulae which, in other contexts, had been used to describe the knowledge of Adam.

The Cartesian language of privation not only looked back to the scholastic tradition, but set the agenda for subsequent rationalist assessments of human reason. Even Spinoza, who sat well outside the bounds of Christian orthodoxy, allowed that Scripture and our natural intellect lead us to believe in "a fall from our initial perfection, caused by our impudence."[34] Spinoza's analysis of the epistemological implications of this Fall follows Descartes and the Scholastics: "error is not something positive in man, it can be nothing but a privation of the proper use of liberty."[35] The necessary "reform" of the fallen mind was to be accomplished through assenting to clear and distinct ideas. This would return the mind to its original condition.[36] Nicolas Malebranche also adopted the privationist position: "we cannot agree with those who say that they are entirely corrupted by Original Sin." Yet he too acknowledged the significance of the Fall, observing that any attempt to seek truth had to begin with a consideration of "the order found in the faculties and passions of our first father in his original state, as well as the changes and disorder that befell him after his sin."[37] Malebranche differs from Descartes in providing a more elaborate physiological account of original sin and its effects, and in his insistence that it is an inherited condition. "We are bound to be born with concupiscence and Original Sin," he states, for sensible objects left indelible brain traces in the first men, which were transmitted epigenetically to all their progeny. This sinful inclination persists as the "natural effort by the brain traces to attach the mind to sensible things."[38] The fact that the mind becomes "corrupted, blinded, weakened, and restricted as its union with its body is increased and strengthened," implies that only a reliance upon the clear and distinct ideas of the mind will guarantee against error.[39] Thus "the mind must judge all things according to its inner lights, paying no heed to the false and confused testimony of its senses

[33] Descartes, *Principles of Philosophy* § 14, CSM I, 201; cf. 249, 257. See also *The World*, CSM I, 97.

[34] Spinoza, *Letters: July 1664-September 1665*, *The Collected Works of Spinoza*, ed. and tr. Edwin Curley (Princeton, 1985), I, 370-71.

[35] Spinoza*, Descartes' Principles of Philosophy,* in *Collected Works* I, 256, cf. 258-59. See also *Letters*, Letter 19, in *Collected Works*, 1, 359.

[36] Spinoza, *Letters: July 1664-September 1665*, *Collected Works* I, 370-71.

[37] Malebranche, *Search after Truth* 1.5 (p. 19). Malebranche's account of how original sin is inherited draws upon the Cartesian physiology of the passions. See *Search After Truth*, 122-23, and Descartes, *Passions of the Soul*, CSM I, 375.

[38] Malebranche, *Search After Truth*, 120. For Malebranche's physiology of memory see John Sutton, *Philosophy and Memory Traces: Descartes to Connectionism* (Cambridge, 1998), 106-13.

[39] *Ibid.*, xxxvii.

and imagination." Malebranche concludes that "Men were not born to become astronomers or chemists, spending their whole life hanging onto a telescope or attached to a burner, and then drawing useless conclusions from their painstaking observations."[40] Clearly Malebranche's analysis of original sin and its cognitive effects directly informs his rationalism and his view of the futility of empiricism.

The stance of the rationalists gave rise to relatively generous estimates of the scope of knowledge, for in principle once the specific nature of the mental privations was understood and taken into consideration, a perfect knowledge might be attained once again. These analyses are thus not merely about how knowledge is to be made, but about its nature and extent. It was Descartes's optimism about the integrity of human reason, along with his view of the persistence of divinely imprinted ideas, which gave him the confidence to set out an *a priori* science which could in principle rival the knowledge of Adam. In none of this is any suggestion that observation and experimentation played no part in Cartesian science, for their role in his program has now been well established. The important point is that knowledge did not begin with sensory observation and that experimentation alone could not provide the kind of certainty and universality traditionally associated with *scientia*. Those who dutifully follow the principles of Cartesian philosophy, its author modestly explained, will "discover many new truths" and "may in time acquire a perfect knowledge of all philosophy, and reach the highest level of wisdom."[41] Indeed, the work which had first fired the enthusiasm of Malebranche was *The Treatise on Man*, the contents of which Descartes described in a letter to Mersenne in these terms: "Rather than explaining just one phenomenon, I have decided to explain all the phenomena of nature, that is to say, the whole of physics."[42] Descartes habitually describes his enterprise as the quest for "true," "certain," and "perfect" knowledge.[43] Malebranche, who more explicitly identified the Cartesian project as the recovery of an Adamic science, shared Descartes's confidence in the rationalist cure for the inherited infirmities of the mind. He concluded that the mind is capable of making infallible judgments when it functions in the way originally intended by God: "when a man judges all things only by the mind's pure ideas, when he carefully avoids the noisy confusion of the creatures, and,

[40] *Ibid*., xl.

[41] Descartes, *Principles of Philosophy*, CSM I, 188.

[42] Descartes to Mersenne, 13 November 1629, CSM III, 7. The events of Malebranche's discovery of Descartes are related by his early biographer, Y. M. André, *La Vie du R. P. Malebranche* (Geneva, 1992), 12.

[43] See CSM II, 48, 49, 111; CSM I, 197, 179, 201; CSM III, 38. On Descartes's conception of certainty, however, see Desmond Clarke, "Descartes' Philosophy of Science," in Cottingham (ed.), *Cambridge Companion to Descartes*, 258-85. On Descartes's own assessment of his achievement see J.-L. Marion, *Sur la Théologie blanche de Descartes* (Paris, 1981), 10.

when entering into himself, he listens to his sovereign Master with his senses and passions silent, it is impossible for him to fall into error."[44]

The Corruption of Reason and the Experimental Philosophy

The view which informed these more optimistic endeavors—that the natural powers of reason retained their efficacy even after the Fall—did not receive universal assent in the early modern period. It was explicitly rejected by the major Protestant reformers and their successors. "It is clear that the natural endowments did not remain perfect, as the scholastics rave" insisted Luther.[45] The "sophists in the Papacy" agreed Calvin, "feign that some part of the reason remains sound and entire" whereas in fact "the whole soul is vitiated, from reason even to the affections."[46] On the issue of the image of God, Luther thought that "through sin this image was so obscured and corrupted that we cannot even grasp it with our intellect." Calvin conceded that it was not "totally annihilated," but insisted nevertheless that it was "so corrupted that whatever remains is frightful deformity."[47] Those in the mainstream reformed traditions were thus to stress in an unprecedented way the negative epistemological implications of those events presumed to have taken place at the dawn of human history. This position, with its explicit departure from the orthodox Catholic view, was to be restated throughout the seventeenth century.[48]

These estimates of the meager vestigial powers of the human intellect suggested to those who professed them a somewhat more modest project than that upon which Descartes and his followers had embarked. Robert South, having praised the virtual omniscience of the prelapsarian Adam, spoke of fate of his progeny in these terms: "Study was not then a duty, night watchings were needless," for it is "the doom of fallen man, to labour in the fire, to seek truth *in profundo*, to exhaust his time and impair his health, and perhaps to spin out his

[44] Malebranche, *Search After Truth*, xxxvii. Malebranche, it must be said, is in many respects an Augustinian thinker, and his view of knowing all things in God has clear Augustinian elements. Yet he retains an optimism about the amenability of the human condition to philosophical therapy.

[45] Luther, *Lectures on Genesis*, 1-5, *LW*, I, 167; I, 142. Cf. Aquinas, *Summa contra gentiles* I.7. Such analyses became standard in the reformed (and particularly Calvinist) traditions. See Reynolds, *Treatise of the Passions*, 5, 44, 483; William Perkins, *An Exposition of the Creed*, in *Workes* (London, 1605), 181-82.

[46] Calvin, *Commentaries on Ezekiel*, I, 375.

[47] Luther, *Commentaries on Genesis*, *LW*, 1, 65. Calvin, *Institutes* I.xv.4 (I, 189). Subsequent Calvinists were even less ambivalent. Robert Burton, for example, spoke of the "destruction of God's image" caused by "the sinne of our first parent Adam." *Anatomy of Melancholy*, I, 122.

[48] See, e.g., Anthony Burgess, *The Doctrine of Original Sin* (London, 1658), 118. Burgess explicitly rejected the notion of sin as mere privation. See 136-43, 210.

days, and himself into one pitiful, controverted conclusion."[49] The Baconian method of a slow and laborious accumulation of knowledge of nature by means of the collection and arrangement of natural histories is in keeping with this less ambitious view of the possibility of a general science. As John Locke was later to express this more modest goal:

> I deny not, but a man, accustomed to rational and regular experiments, shall be able to see farther into the nature of bodies, and guess righter at their yet unknown properties, than one that is a stranger to them: But yet, as I have said, this is but judgment and opinion, not knowledge and certainty. This way of getting and improving our knowledge in substances only by experience and history, which is all that the weakness of our faculties in this state of mediocrity, which we are in this world, can attain to; makes me suspect, that natural philosophy is not capable of being made a science.[50]

Locke's empiricism was not simply an alternative proposal for acquiring knowledge which was ultimately of the same kind as that proposed by the rationalists. Rather it involved a fundamentally different estimate of what kind of knowledge is possible, and of the extent of that knowledge.

Claims to certainty in the sphere of natural philosophy were, on this view, sure signs that the Fall and its baleful effects had not been taken seriously enough. Descartes's philosophy, considered in this light, was less a response to the Fall than a case of marginalizing its significance. The reservations of Gassendi on this point have already been noted. Mersenne also cited passages of scripture which seemed to count against the possibility of Cartesian certitude.[51] The condemnations of Dutch Protestants were added to those of French Catholics.[52] These criticisms were met in turn with counter-claims against the empirical methods proposed as alternatives to a priori science. Catholic critics of the methods advocated by Bacon and Glanvill—pejoratively categorized as

[49] *Ibid*. Cf. Luther, *Lectures in Genesis*, *LW*, I, 68, 120.

[50] Locke, *Essay*, IV.12.10 (p. 645). Cf. *Some Thoughts Concerning Education*, 190, ed. John W. Yolton and Jean S. Yolton (Oxford, 1989), 244; cf. Glanvill, "Against Confidence in Philosophy," 15, in *Essays*. See also W. M. Spellman, *John Locke and the Problem of Depravity* (Oxford, 1988). On empiricism as mitigated skepticism see S. Buckle, "British Sceptical Realism: A Fresh Look at the British Tradition," *European Journal of Philosophy*, 7 (1999), 1-29.

[51] Descartes, *Objections and Replies*, CSM II, 279-80.

[52] See, e.g., Gisbert Voetius, "De errore & heresie," I.iv, II.i, in *Selectarum disputationum theologicarum* (4 vols., Ultrajecti, 1648), III, 701, 714, 702. For a useful account of the views of Voetius and his reaction to Cartesianism, see Theo Verbeek, "From Learned Ignorance to Scepticism: Descartes and Calvinist Orthodoxy," in Richard Popkin and Arjo Vanderjagt (eds.), *Scepticism and Irreligion in the Seventeenth and Eighteenth Centuries* (Leiden, 1993), 31-58, and Nicholas Jolley, "The Reception of Descartes' Philosophy," *The Cambridge Companion to Descartes*, 393-419.

the "laborious amassment of Experiments"—regarded this approach as a sure path to skepticism.[53] Controversialist Thomas White thus accused Glanvill, along with the empiricist Pierre Gassendi, of having sought to "tear *Science* it self out of the hands of the Learned, and throw it into the dirt of *Probability*."[54] That partial and uncertain knowledge at which experimentalists aimed was not, in his view, science at all.

The Rectification of Perverted Judgments

The two positions somewhat simplistically characterized as "rationalism" and "empiricism" are the most familiar solutions to the early modern problem of knowledge, but they were by no means the only ones. Some thinkers argued for an explicitly spiritual solution to what seemed to be primarily a religious problem. Personal piety and divine revelation were not infrequently proposed as ways of overcoming the curse of human ignorance. Renaissance occult writer Henry Cornelius Agrippa wrote that following Adam's ejection from paradise the tendency to error had been "mans propertie."[55] Agrippa held that true knowledge required "not muche labour … but Faithe and Praier: not the studie of longe time, but huymblenes of Spirite and cleannesse of Harte: not the sumptuous furniture of many bookes, but a pure understanding."[56] It was his skeptical conclusion that "It is better therefore and more profitable to be Idiotes, and knowe nothinge" than "being lofty & prowde through the subtilties of science to fall into the possession of the Serpente."[57] Agrippa was thus the advocate of a skeptical fideism in which learning was a sealed book which could be opened only by God and only for his elect.

Some of the followers of Paracelsus held a similar position. Only a medical knowledge which was grounded in the Christian tradition would, in their view, provide useful cures. Paracelsian medical reformer Robert Bostocke thus wrote that "The Ethnicks or heathen haue of their own braynes deuised" a kind of physic which "is not founded upon the rule of Gods worde, but upon the authorities of men reprobate of God, & such as were Idolaters and ignorant of the trueth." These "heathen Phisitions," he insisted, "must needes erre and stray, not receiving the key of wisdome, which is the science of GOD himselfe, who giveth wisdome to the wise."[58] In the following century the German theosophi-

[53] Thomas White, *An Exclusion of Sceptics from all Title to Dispute* (London, 1665), To the Reader.

[54] *Ibid.*, 55. See also John Sergeant, *The Method to Science* (London, 1696), Preface, Sigs. a^{v}-a2^{v}.

[55] Agrippa, *Vanitie and Vncertainty*, To the Reader, Sig. 3^{v}.

[56] *Ibid.*, Sig. 187^{v}.

[57] *Ibid.*, Sig. 182^{v}.

[58] Bostocke *Auncient Phisicke*, Sigs. B1^{v}-B2^{r}.

cal writer Jacob Boehme declared that when men "learned in Arts and Sciences" rely upon natural reason, "nothing cometh of it but Pride of themselves."[59] Genuine knowledge does not arise out of "Academick, or University, or Scholastick learning," but through the purification of the mind "by earnest repentance, fasting, watching, praying."[60] Similar views existed amongst those devoted to alchemy. Lauren Kassell writes that "Study, along with prayer, were essential activities for anyone who wished to conduct successful alchemical experiments."[61]

These claims are somewhat less familiar than those of Descartes, Malebranche, Bacon, and Locke, yet they share certain important features. In a sense all proposals for the reformation of learning suggest some kind of redemptive process aimed at treating the malignity which lay at the heart of the human condition. These are not simply rival epistemologies, but rather represent different moral or spiritual prescriptions for a universal mental malady. Hence Descartes's assertion, admittedly somewhat timid when compared to the Paracelsian position, that "man cannot achieve correct knowledge of natural things so long as he does not know God."[62] Malebranche was more explicit: "The mind becomes purer, more luminous, stronger, and of greater scope as its union with God increases, because this union constitutes its entire perfection." In this almost mystical state, the mind can grasp the divinely implanted ideas, without creaturely distractions and thus arrive at an unimpeachable knowledge.[63] English physician Walter Charleton also seems to endorse the Cartesian position when he states that "that no one thing in Nature can be known, unlesse the Author of Nature be first knowne."[64] Charleton also makes it clear that this is not a mere intellectual assent to the existence of God. Rather, knowledge of the Deity is required for "the *Rectification* of perverted *Judgments*."[65]

Early modern epistemological endeavors were thus at least in part directed towards religious and moral formation. The human mind, with its inherent propensity for error, was to be shaped and disciplined morally, purged of distorting influences, and by these means made fit for the formulation of ideas or the reception of sense perceptions. John Milton wrote that "The end of learning is

[59] Jacob Boehme, *The Way To Christ* (London, 1622), 1.

[60] Boehme, *The Second Booke* (London, 1648), Preface.

[61] Lauren Kassell, "Reading for the Philosophers' Stone," in Marina Frasca-Spada and Nick Jardine (eds.), *Books and the Sciences in History* (Cambridge, 2000), 132-50 (133).

[62] Descartes, *Reply to Objections*, VI, CSM II, 290.

[63] Malebranche, *Search After Truth*, xxxvii. The Cartesian Pierre Poiret was even more overtly mystical. See Thomas M. Lennon, "The Cartesian Dialectic of Creation," in Daniel Garber and Michael Ayers (eds.), *The Cambridge History of Seventeenth-Century Philosophy* (2 vols., Cambridge, 1998), I, 331-62.

[64] Walter Charleton, *The Darknes of Atheism Dispelled by the Light of Nature* (London, 1652). Charleton actually identifies this with the scholastic motto: *Nulla res, qualifcunque est, intelligi potest, nisi Deus paus intelligatur*.

[65] *Ibid*., Sig. a2^{v}.

to repair the ruins of our first parents by regaining to know God aright…. But because our understanding cannot in this body found itself but on sensible things … the same method is to be followed in all discreet teaching."[66] The more specific prescriptions of Cartesians and experimental philosophers were based upon a similar premise. Descartes insisted that knowledge be conjoined with charity, for else it would become proud and vain.[67] In the *Discourse*, moreover, Descartes sets out his "provisional moral code" as part of what guided his search for truth. Here he determines "to try to master myself rather than fortune, and change my desires rather than the order of the world."[68] This bears echoes of the Stoic moral program—linked by Amélie Rorty and others to what is meditative about the *Meditations*.[69]

The more active experimentalism of the empiricists thus aimed at a similar outcome through somewhat different means. Joseph Glanvill claimed that the empirical approach also provided a strategy for overcoming the inherently wayward tendencies of lapsed intellects. The Baconian method and the "experimental philosophy," he claimed, function "by giving the mind another *tincture*, and introducing a *sounder habit*, which by degrees will at last absolutely repel all the little malignancies, and setle in it a *strong* and *manly* temperament, that will master, and cast out *idle dotages*, and *effeminate Fears*."[70] Bacon himself had written on numerous occasions of the need to purify the understanding to align it with the mind which Adam had before the Fall. In the opening mediation of *The Great Instauration* he prays that his mind might be "purified and purged of fancies and vanity," and "that knowledge being now discharged of that venom which the serpent infused into it, and which makes the mind of man to swell, we may not be wise above measure and sobriety, but cultivate truth in charity."[71] In numerous other places he points out that it is the cardinal sin of

[66] John Milton, "On Education," *The Prose Works of John Milton*, ed. J. A. St John and Charles Sumner (5 vols., London, 1848-64), III, 462-63; Cf. Jean Gailhard, *A Treatise Concerning the Education of Youth* (London, 1678), 28.

[67] Descartes, *Objections and Replies*, CSM II, 279-80, 290.

[68] Descartes, *Discourse*, CSM I, 123.

[69] Amélie Rorty, "The Structure of Descartes' *Meditations*," in *Essays on Descartes' Meditations*, ed. Amélie Rorty (Berkeley, 1986), 2. In the same volume see also Gary Hatfield, "The Senses and the Fleshless Eye: The Meditations as Cognitive Exercises," 45-79. Others who have drawn attention to the formally meditative mood of the *Meditations* include Walter Stohrer, "Descartes and Ignatius Loyola: La Flèche and Manresa Revisted," *Journal of the History of Philosophy*, 17 (1979), 11-27; Arthur Thomson, "Ignace de Loyola et Descartes: L'influence des exercises spirituels sur les oeuvres philosohiques de Descartes," *Archives de philosophie*, 35 (1972), 61-85; L. J. Beck, *The Metaphysics of Descartes: A Study of the "Meditations"* (Oxford, 1965), 28-38; Z. Vendler, "Descartes' Exercises," *Canadian Journal of Philosophy*, 19 (1989), 193-224. More skeptical about the link between Descartes's work and the traditional spiritual exercises is Bradley Rubidge, "Descartes's *Meditations* and Devotional Meditations," *JHI*, 51 (1990), 27-49.

[70] Glanvill, *Philosophia Pia* (London, 1671), 46.

[71] Bacon, *Great Instauration*, *Works* IV, 20.

pride, the first sin of Adam and Eve, which inhibits the acquisition of true knowledge.[72]

These therapeutic proposals for the rectification of human knowledge, while they gave rise to somewhat differing prescriptions, contained a common, if at times implicit, repudiation of the methods of Aristotle. The implementation of new procedures for the advancement of philosophy was premised on the view that existing disciplines were fundamentally flawed, and the idea of the mind's debilitation provided a useful justification for abandoning the philosophy of the Schools which had too readily assumed the ease with which knowledge of nature could be gathered. Aristotelian philosophy, after all, was based on a relatively uncritical epistemology which assumed that the senses represent the world to us much as it really is. Bacon observed that prevailing scientific knowledge "lay near to the senses, and immediately beneath common notions." It was his goal, by way of contrast, to know "the remoter and more hidden parts of nature."[73] Joseph Glanvill likewise not unfairly regarded Aristotelian science as knowledge "built on the unexamin'd prejudices of *Sense*."[74] Knowledge of the Fall, made known through revelation in the Scriptures, thus served as warning against naïve and uncritical epistemologies. It could be argued that the deficiency of the sciences of the peripatetic schools lay in their ignorance of the history of those first events in Eden, and of the mind's inherent infirmities which had resulted from them. Glanvill wrote that "it is the shallow, unimprov'd intellects that are the confident pretenders to certainty," and these unimproved intellects were none other than the "voluminous Schoolmen, and Peripatetical Dictators."[75] Blaise Pascal rated the efforts of the "philosophers" similarly: "they knew the excellence of man, they were ignorant of his corruption; so that they easily avoided sloth, but fell into pride."[76]

Aristotelian philosophy and its uncritical assumption of the accessibility of nature to human minds was found wanting on another score. Those thinkers who argued for a radical corruption of human nature after the Fall spoke also of a collateral damage which extended to the whole sublunary world.[77] As a result of human failings, the whole of creation fell. Animals became wild, the earth became infertile, mountains and valleys appeared, and imperfect creatures came

[72] Bacon, *Natural and Experimental History*, *Works* V, 132; *Historia ventorum*, *Works* II, 14-15.

[73] Bacon, *Great Instauration*, *Works* IV, 18.

[74] Glanvill, *Vanity of Dogmatizing*, 73.

[75] *Ibid.*, 14-15. At this time, Glanvill was still a supporter of Cartesian philosophy.

[76] Pascal, *Pensées* §435. This avenue of criticism was pursued most enthusiastically by those in the reformed traditions. See Luther, *Lectures on Genesis*, *LW*, I, 166; Calvin, *Institutes*, II.vii.6 (I, 355). On characterizations of Aristotelian science as proud and "puffed up" knowledge see Harrison, "Curiosity, Forbidden Knowledge, and the Reformation of Natural Philosophy in Early-Modern England," *Isis*, 92 (2001), 257-78.

[77] The biblical sources for this view were Genesis 3.17-18; Romans 8.20-22.

into existence. Numerous authors, relying on the arcane conception of microcosm and macrocosm, suggested that just as the lowly passions rebelled against reason, so the lower parts of creation, from animals and plants to the very earth itself, had ceased to serve human beings in the way originally intended.[78] This intransigence of nature rendered it opaque to the minds of its would-be interpreters. It could thus be claimed that the presumed correspondence between knowing subject and known object which had existed in the mind of Adam, frequently understood as the correspondence between the image of God in the human mind and the image of God in the natural world, had been severely disrupted. Physician Gideon Harvey wrote that before the Fall, "there was no resistence or obscurity in any of the objects; because they, being all created for the service of man, had their natures (as it were) writ upon their breast, so that herein they were at the command of the understanding."[79] On this view, knowledge of nature required not only a recognition of the cognitive limits of fallen minds, but of the corruption and epistemological inaccessibility of nature and its operations. As metaphysical poet Thomas Traherne expressed it: "if nature were divested of its Corruption, the Natural Man … might by the Light of Nature, be fitted to understand [it]."[80]

The assumption of the corruption of nature gave rise to varying responses. French Augustinian writer Jean-François Senault suggested a disengagement from the fallen objects of nature: "Thus all the vertes teach us that all the creatures are corrupted, that it is better to passe by them, then to make use of them, that it is safer to contemn them, then to imploy them, and that if Philosophy teach us the use of them, Religion counselleth us their privation."[81] The German reformer Philip Melanchthon sought out those features of nature least likely to have undergone mutation as a consequence of the human Fall. Adhering to the Aristotelian distinction between the perfect and immutable heavens and the corruptible sublunary regions, Melanchthon suggested that while the latter had suffered corruption as a consequence of human transgressions, the celestial regions had retained their pristine perfection. Thus, the heavens would repay close observation in a way that the study of terrestrial phenomena would not, for the former had retained their intelligibility and their transparency to human reason.[82]

[78] See Harrison, "Reading the Passions."

[79] Gideon Harvey, *Archelogia Philosophica Nova, or New Principles of Philosophy* (London, 1663), 89.

[80] Thomas Traherne, *Christian Ethics: Or Divine Morality* (London, 1675), 101. Thomas Browne adopted a related position, arguing that since the Fall nature had been under the thrall of Satan, who could distort it and manipulate it. *Pseudodoxia Epidemica* I.x, xi. (I, 58-73).

[81] Jean-François Senault, *Man Becom Guilty, Or the Corruption of Nature by Sinne, according to St. Augustin's Sense* (London, 1650), 365-66.

[82] Charlotte Methuen, "The Role of the Heavens in the Thought of Philip Melanchthon," *JHI*, 57 (1996), 385-403.

The most significant response to the resistance of the fallen world to human inquiry, however, came from Francis Bacon. Bacon insisted that nature not be taken at face value, but studied in three modes: nature in its natural course; nature "erring and varying"; and nature "altered and wrought."[83] This was a radical departure from the Aristotelian approach in which apparently aberrant events were considered inappropriate raw material for the sciences. In Bacon's estimation, it was a deficiency of Aristotle's natural history that it included no "experiments of the mechanical arts." "The secrets of nature," he pointed out, "reveal themselves more readily under the vexations of art, than when they go their own way."[84] Bacon's assertion that facts needed to be forcibly extracted from a nature constrained and manipulated by the mechanical arts was the premise upon which the experimental practices of the seventeenth century were based. Later in the century Robert Hooke was to repeat that "the footsteps of Nature are to be trac'd, not only in her ordinary course, but when she seems to be put to her shifts, to make many doublings and turnings, and to use some kind of art in indeavouring to avoid our discovery."[85]

Thus, implicit in the notion of the cosmic Fall were two objections against the Aristotelian program. First, sensory information was not to be taken at face value on account of weakened senses and corrupt intellects. Second, nature itself was fallen and untrustworthy and its opaqueness to human reason called for manipulation, coercion, and experimentation, in order to extract its once conspicuous secrets. Over the course of the seventeenth century these two aspects of the doctrine of the Fall—the conviction that the nature was fallen and uncooperative, and the acknowledgment of deficiencies of human sensory and intellectual faculties—helped bring to an end the common sense philosophy of Aristotle.

The major contention of this paper has been that the various early modern strategies for the advancement of knowledge can be related to different assessments of the effects of the Fall on the human mind. Prescriptions for knowledge were correlated with divergent accounts of exactly what damage was wrought by the Fall. For Bacon, whom we may take as a spokesperson for empiricism, the innate idols of the mind lay in "the intellect, which is far more prone to error than the sense is."[86] With the necessary safeguards in place, the senses could be regarded as trustworthy. For the rationalists, on the other hand, the senses had been sullied on account of their implication in the Fall. Accord-

[83] Bacon *De Augmentis*, *Works* IV, 292-95. Cf. *Works* III, 361. See also Hooke, *Micrographia*, Preface.

[84] Bacon, *Novum Organum* I.xcviii, *Works* IV, 94-95.

[85] Hooke, *Micrographia*, Preface.

[86] Bacon, *Great Instauration*, *Works* IV, 27.

ingly Malebranche saw it as his task "to combat what is falsely called experience, and to argue against the prejudices and illusions of the senses." Malebranche even went so far as to say that original sin itself is "nothing other than a natural effort by the brain traces to attach the mind to sensible things."[87] So it was that different understandings of the postlapsarian fate of the intellect and of the senses gave rise to differing prescriptions for the attainment, or attempted attainment, of Adamic knowledge. These differences, in turn, were paralleled by varying estimates of how successful a science of nature could be. The optimism of the rationalist tradition is thus related to a view of the Fall which considers its effects to be serious, yet reversible—a privation rather than a complete corruption, and hence a condition amenable to therapy. Such thinkers could be quite sanguine about the prospects of perfecting a natural science. For Descartes and Malebranche the perfect science could be the product of a single mind. The empiricist approach to nature, on the other hand, called for rigorous experiments, laborious accumulation of results, the work of numerous minds and many years, in order to achieve results which would at best be probable.

To a degree these differences are related to the Catholic-Protestant divide, both on questions of anthropology and the theological process of justification. For the Catholic tradition, the rectification of the human mind was possible in the present, for in the Christian life the individual might be restored through a process of sanctification, mediated by the Church and its sacraments, to a state comparable to the sinless Adam. Sinful human beings could literally regain their original righteousness. Protestants on the other hand, tended to be less sanguine about the prospects of such a rehabilitation. For them underlying fallen condition remains, even for the elect. *Simul iustus ac pecator* (simultaneously justified and a sinner) was Luther's motto. For the reformers the business of acquiring knowledge is forever a fraught enterprise, with modest goals and the ever-present need to guard against error. Of course, there can be no simple equation here, for there are individual counter-instances. To a degree these are related to the fact that Catholicism retained strong elements of Augustinian anthropology, most conspicuous at Port Royal, while Protestant nations had Arminian movements which adopted a more optimistic anthropology similar to that found in Catholicism. The relationship is perhaps best expressed in these two claims: First, there are important differences between Catholic and Protestant assessments of the cognitive damage brought by the Fall; second, differences in such assessments yield different strategies for the attainment of knowledge.

Having said this, it must be conceded that issues of historical causation are complex and problematic. It would be possible to argue, for example, that prior

[87] Malebranche, *Search after Truth*, xxxiv, 120.

epistemological commitments determined how the cognitive impact of the Fall was understood, rather than the reverse. If we take the statements of the historical actors themselves at face value, however, we are led to the view that it is interpretations of the Fall which drive the epistemological agenda. It is also significant that the move to adopt more literal readings of the Fall and the appearance of more pessimistic views about human cognitive powers were historically prior to the development of the empirical methods of the early modern natural philosophers. Furthermore, this suggestion of a reversal of casual direction would imply that the actors had independent (and so far unexplained) reasons for adopting their varying epistemological stances, or perhaps even that the empirical methods of natural philosophy were developed because they were "right" and the prevailing Aristotelianism "wrong." The procedures which have come to characterize the modern sciences, while now familiar, are by no means obvious or intuitive ways to approach the natural world. This alternative thus leaves a number of questions unanswered. Another option would be to suggest that in seeking religious sanction for their respective programs, natural philosophers sought to show how their perspectives on knowledge conformed to ruling theological orthodoxies. The ubiquitous references to the Fall which occur in the literature might thus be understood primarily as rhetorical appeals to religious authority. This is a more subtle position, but it too leaves open the question of the origins of experimental philosophy. While there is room for discussion here, and indeed further investigation, the evidence set out in this paper represents a prima facie case that ideas of the Fall played a major role in both the origins of modern empiricism and in subsequent attempts to legitimate experimentalism.

It is worth noting at this juncture that there is already a widespread view amongst historians of early modern science that one particular theological perspective—divine voluntarism—influenced the development of experimental methods. Because the Deity was free to lay down whatever natural laws he chose, it is argued, only empirical investigation as opposed to a priori speculation will give us valid knowledge of the operations of nature. If my analysis is correct, the early-modern revival of the Augustinian view of original sin is a far more plausible explanation for this important development. It is not so much that God could have ordered nature in any way he chose which is significant, but rather the fact that nature had deviated from the original divine plan which rendered necessary the experimental approach.[88] Experimental natural philosophy was a means of imposing discipline on both an errant natural world and on fallen human minds. The insistence on the cultivation of particular virtues on the part of the natural philosopher, the use of artificial instruments, the ma-

[88] I have assessed the merits of the voluntarism thesis elsewhere. See Peter Harrison, "Voluntarism and Early Modern Science," *History of Science*, 40 (2002), 63-89.

nipulation of nature out of its normal course, the modest goals of probabilistic knowledge, all represent a response to the corruption of nature and the inherited infirmity of human minds.

Finally, in recent years Stephen Shapin and others have argued persuasively that seventeenth-century experimental philosophy gained legitimacy through social frameworks of trust.[89] "Truth" was thus the product of a trust which emerged out of the gentlemanly status of the practitioners of science. From the preceding discussion it can be said that there is a prior question to do with the origins of *mis*trust—the mistrust of reason, the senses, the passions, of the opinions and reports of third parties and ancient authorities. Understanding the history of error is a precondition for a history of truth. The basic premise for the new ways of knowing was, as Bacon himself expressed it, the view that "the human intellect left to its own course is not to be trusted."[90] This renewed sense of mistrust in the powers of the mind and the senses accounts not only for the elaborate procedures of the new experimental philosophy, but also for the meditative and mystical rationalism of the Cartesians. This suspicion contrasted sharply with the optimism of Aristotle and his medieval successors, for whom natural philosophy consisted of commonsense generalizations based on observations of everyday phenomena. The legitimacy of the new methods of investigation, in short, relied at least in part on the extent to which they were thought to counter those erroneous tendencies of the human mind which were the baleful consequences of Adam's Fall.

Bond University, Australia.

[89] Steven Shapin, *A Social History of Truth* (Chicago, 1994).
[90] Bacon, *Great Instauration*, *Works* IV, 17.