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## 7 Bacon's science and religion

We must make therefore a complete solution and separation of nature, not indeed by fire, but by the mind, as if by a divine fire [*tamquam ignem divinum*]. [IV, 145; I, 257]<sup>1</sup>

[It is an age] wherein, if science be increased, conscience is rather decayed, and if men's wits be great, their wills be more great . . . [VII, 315]

### I THE SEPARATION OF SCIENCE AND RELIGION

A longstanding commonplace in Bacon scholarship has been the notion that the Baconian advancement of learning depends upon a strict separation of divinity and natural philosophy.<sup>2</sup> In a number of memorable passages Bacon indeed warns his readers of the dire consequences of confusing divinity with natural science: to combine them, he says, is to confound them. This is supposedly what Plato and the scholastics did, and what Bacon explicitly designs the new learning to overcome. Even the acceptable hybrid "divine philosophy," when it is "commixed together" with natural philosophy, leads to "an heretical religion, and an imaginary and fabulous philosophy" (III, 350). According to this emphatic strand of Baconian doctrine, religion that joins with the study of nature is in danger of becoming atheistic, or an enthusiastic rival of the true church. Natural philosophy that traffics unwisely with divinity collapses into idolatry or fakery.

Bacon's exemplum of these abuses in a modern proto-science is the divine philosophy of the Paracelsian school, which seeks "the truth of all natural philosophy in the Scriptures." The Paracelsians

mirror and reverse the heresies of pagan pantheism by seeking what is "dead" (mortal or natural) from among the "living" (eternal) truths of divinity, when "the scope or purpose of the Spirit of God is not to express matters of nature in the Scriptures, otherwise than in passage, and for application to man's capacity and to matters moral or divine" (III, 485–6). If we take Thomas Sprat at his word, the Royal Society was founded on generally similar principles. The first corruption of knowledge, he argues, resulted from the Egyptians' concealment of wisdom "as sacred Mysteries." The current age of inquiry benefitted from "the dissolution of the *Abbeys*, whereby their Libraries came forth into the light, and fell into industrious Mens hands." Surrounded by the warring forces of contrary religions (the society's rooms at Gresham College, London, were occupied by soldiers in 1658), the founders of the Royal Society – according to Sprat's account – were "invincibly arm'd" not only against scholastic Catholicism, but against the "inchantments of *Enthusiasm*" and "spiritual Frenesies" that sometimes characterized the Protestant revolutionaries.<sup>3</sup>

In Bacon's project, there is an explicit, delineated role for the study of divinity, which he carefully separates from his own work. Reason is at work "in the conception and apprehension of the mysteries of God to us revealed" and in "the inferring and deriving of doctrine and direction thereupon" (III, 479). In the first instance reason stirs itself only to grasp and illustrate revelation; it does not inquire. This is the foundation of Bacon's distinction between true natural philosophy, which inquires into the world as God's manifestation of his *glory* or power, and true theology, which piously interprets the scripturally revealed meaning of God's inscrutable will. The natural world declares God's glory but not his will (III, 478). Reason's power in theology therefore "consisteth of probation and argument." It formulates doctrine only insofar as God's revelation, largely or wholly through Scripture, makes it possible. The Lord "doth grift [grat] his revelations and holy doctrine upon the notions of our reason, and applieth his inspirations to open our understanding" (III, 480).

These axioms, all drawn from *The Advancement of Learning*, support Bacon's defense of the new sciences as nonthreatening complements to established principles of Divinity.<sup>4</sup> But their significance is influenced by their participation in *The Advancement of Learning*,

which is Bacon's most public and self-consciously introductory disquisition on the nature of the new sciences. Bacon lets it be known elliptically that he writes "not in hand with true measure, but with popular estimation and conceit." It is "not amiss" to write askant of "true measure" in order to cope with popular misconceptions of scientific learning. Bacon is particularly concerned about resisting the opinion that scientific learning places more importance upon "second causes" than upon God. His fundamental opponent is the notion that scientific learning is necessarily a breeding ground for heresy, even for atheism (III, 274).<sup>5</sup>

Bacon uses various forms of indirection, including blunt statements and covert argumentation in dispersed passages, to avoid and overcome popular misunderstandings that threaten his project. When he elaborates upon the meaning of the separation of Divinity and natural philosophy, his discourse is often complex:

[L]et no man, upon a weak conceit of sobriety or an ill-applied moderation, think or maintain that a man can search too far or be too well studied in the book of God's word or in the book of God's works, divinity or philosophy; but rather let men endeavour an endless progress or proficience in both; only let men beware that they apply both to charity, and not to swelling; to use, and not to ostentation; and again, that they do not unwisely mingle or confound these learnings together. (III, 268)

Here the surprise for modern readers is that Bacon's familiar insistence upon the separation of Divinity and natural science is incorporated within a strategy for inquiring energetically into Scripture as well as into nature. The repressive enthusiasm of schismatics has come to block true inquiry into Scripture, just as it has inquiry into the world of God's works (III, 481). Bacon wrote to the earl of Rutland in the mid 1590s that without knowledge "there can be no true religion, all other devotion being but blind zeal, which is as strong in heresy as in truth" (IX, 11).

Without assuming that Sprat's history of the Royal Society gives us the final word on Bacon's legacy, it is evident that Sprat's own treatment of religion's relation to science is, like Bacon's, more complex than his emphatic doctrine of separation. Sprat endorses the ancient view that the most learned philosophers are "skill'd in all *Divine* and *human* things."<sup>6</sup> On his roster of the founders of the Royal Society, he first lists "the present Bishop of Exeter,"<sup>7</sup> and cites the protection

afforded to the Society by churchmen who "have shewn that in our *vention* of Gods almighty power, we ought to imitate the manner of our respect to *Earthly Kings*."<sup>8</sup> To match John Wallis's contention that the Society was "an invisible college" whose business excluded "matters of theology," we have Boyle's dedication of his doings to the glory of God and the charitable treatment of mankind.<sup>9</sup> Sprat's *History* includes Abraham Cowley's famous poem likening Bacon to Moses. The metaphor ostensibly emphasizes Bacon's freeing of the intellect from its pharaoh-like schoolmasters, and yet Cowley's enthusiasm leads him to invest Bacon with something of the archaic power of the biblical lawgiver.

Another surprise awaits the reader who comes upon Bacon's condemnation of Paracelsians who arrogantly search the Scriptures for all the truths of natural philosophy. In fact, says Bacon, "they set the rest of natural philosophy at war with Scripture": "there is no such enmity between God's word and his works" if they are approached more temperately (III, 486). Properly conceived, the new sciences provide a possible opening to the understanding of God's will by means of a new method. One key to Bacon's understanding of this relation lies in his strangely pervasive, largely biblical definition of wisdom, sometimes called *Sapience* (IV, 337), a term he uses to describe "*Philosophia prima*." In *Philosophia prima*, divine, natural, and human philosophy meet "in one stem" (III, 346). With uncommon consistency, Bacon uses *wisdom* to invoke this extraordinary idea in numerous passages. In the section just quoted, Bacon's use of "unwisely" suggests that divinity and nature (he means divine philosophy and natural philosophy) can indeed be mixed if mixed *wisely*.

One way Bacon justifies mixing divinity and philosophy is to define Christianity as a mean between purer yet ultimately inferior treatments of religion by the ancients and by believers in Islam. Heathenism depends entirely upon argument and so dismisses belief, Islam "interdicts argument altogether" (V, 113). In keeping with Bacon's early writings on religious moderation, *Philosophia prima* offers a way of mixing divinity and natural philosophy moderately so as to escape pagan unbelief and religious zealotry. Is Bacon merely making the conventional argument that Christianity permits reason to mix with true doctrine, or is he saying something more particular and daring about the way in which divinity and natural philosophy can combine within the new sciences?

## II THE RESTORATION OF PARADISE

In the *Novum organum*, we see more of Bacon's willingness to include to what this mixture of divinity and natural philosophy might be. Commentators have often remarked upon the religious cast of the work's diction. Bacon proceeds with "religious care" (IV, 105). He expresses a desire to become a conduit of God, Son, and Holy Ghost so that "they will vouchsafe through my hands to endow the human family with new mercies" (IV, 20). It appears that the method of becoming that channel for mercy must be a sort of scientific religion, not just Christian observance. The new science is "a certain course and way" (IV, 32), accompanied by "divine assistance" that helps bring about a "true and legitimate humiliation of the human spirit" (IV, 19-20). Entrance into the new sciences depends upon their followers' imitating the little children favored by Christ, children whose lack of vanity gives them privileged access to the kingdom of heaven (IV, 69).

With these preparations, Bacon asks that God "graciously grant to us to write an apocalypse or true vision of the footsteps of the Creator imprinted on his creatures" (IV, 33). In the created world there are traces and signatures of the divine mind – of the supposedly inscrutable divine will. The fulfillment of Daniel's unlikely prophecy that seafarers will discover new lands is a sign that the advancement of the sciences is "destined by" Providence (IV, 91-2). The human race can legitimately seek its "right over nature which belongs to it by divine bequest" (IV, 115). The Fall was the result of a flaw in man's moral knowledge, not his capacity to know nature (III, 264, 296-7), and now his very labor – the curse that he work by the sweat of his brow – seems capable of reversing nature's rebellion from man, as God has intended (IV, 247-8, 33).

In this context, Bacon's religious metaphors seem to be more than casual exploitations of the familiar religious vernacular. Imitating Solomon, Bacon is intent upon "laying a foundation in the human understanding for a holy temple after the model of the world" (IV, 107). The new natural philosophy is connected to religion as a subordinate yet powerfully complementary instrument. It is "after the word of God[,] at once the surest medicine against superstition, and the most approved nourishment for faith, and therefore she is rightly given to religion as her most faithful handmaid" (IV, 89). The goal of

that handmaid is nothing less than to reverse a major consequence of the Fall: to restore man's mastery over nature to "its perfect and original condition," or if that proves impossible, to improve the human condition radically by means of scientific charity (IV, 7, 20). The new sciences aspire to remake an Eden for human knowledge in tandem with Divinity's repair of man's moral condition.

The *Novum organum* distinguishes itself from *The Advancement of Learning* by using religious language to focus on the "total reconstruction" of learning (IV, 8). It suggests that the new sciences might be involved in adapting or even renovating the religion to which they are handmaids. The *Novum organum's* most explicit teaching in this regard is as emphatic as it is opaque: "Only let the human race recover that right over nature which belongs to it by divine bequest, and let power be given it; the exercise thereof will be governed by sound reason and true religion" (IV, 115). Faith will presumably repair the fall from innocence, and science will restore dominion over nature (IV, 248). But the conjunction of the activities of science and faith in renewing the Edenic life raises the question of what the new sciences might do to religion, or what they might do with religion as their instrument, to ensure that the new sciences will prosper.

It is worth remembering that Prometheus is Bacon's image of Providence, whose "peculiar work . . . was the creation and constitution of Man." Man, Bacon explains, "may be regarded as the centre of the world," for "the whole world" including the stars "works together in the service of man" (VI, 746-7). Man's dominion over what he can use, as long as it is providentially available for his use, opens the door to a mastery of nature that is limited only by God's will, which itself might be glimpsed in apocalyptic signs.

## III IDOLS AND SUPERSTITION, INDUCTION AND SOLOMONIC DISCOURSE

The *Novum organum* contains Bacon's famous analysis of the enemies of the new learning, which he calls the Four Idols. Permeating his discussion is the notion that opposition or resistance to the new sciences is really a form of heresy – if not an explicit religious heresy, at least one that profoundly corrupts and indicts the inner being of those who embrace it. Idolatrous heresies need to be smashed, or

neutralized by those who have shattered idolatrous tendencies in themselves. Legacies of the Fall, such heresies are forms of superstition or innate error that hold the mind enthralled. Bacon argues that superstition's power is especially great (greater than atheism's [III, 349]) because it imitates the power of true religion, making effects that pass as miraculous or magical even though they create dangerous enchantments and controversies. In the form of "the blind immoderate zeal of religion," superstition disrupts the peace that is the precondition and goal of the new sciences [IV, 87-8]. It threatens to displace even true religion, "the thing which has most power over men's minds" [IV, 87-9].<sup>10</sup>

As perverse religion, superstition has a commensurate power to tempt the faithful by presenting them with misleading auguries (IV, 76-7) and other instruments of exaggeration that make for vain wonder. It manipulates admiration for knowledge so that men are satisfied with what is inadequate or incomplete [IV, 85]. It is bound up with the enchanting power of "fables and superstitions and follies which nurses instil into children" (IV, 30). Hence Bacon's deep distrust of poetry, which in the wrong hands produces "enchantments" of such influence over men's powers "that they have been made impotent (like persons bewitched) to accompany with the nature of things" [IV, 82].

The fact that idolatry can be manipulated by spell makers<sup>11</sup> suggests that some people might be able to transcend superstition. Bacon lets it be known in the *De augmentis* that he has a great appreciation for the power of certain enchantments if they are "well directed." Particularly in the theater, enlightened spells can be used against benighted ones, for it is "one of the great secrets of nature, that the minds of men are more open to impressions and affections when many are gathered together than when they are alone" (IV, 316). A scientifically pious mastery of enchantment, however, is not possible unless idols can be "marked and reprov'd." And that accomplishment is not practical, it seems, without its being laid down "once for all as a fixed and established maxim, that the intellect is not qualified to judge except by means of induction, and induction in its legitimate form" (IV, 27). Wise inquirers know that ordinary induction is not enough. Overcoming idolatry requires, at a minimum, an inductive discipline of such strictness and significance that it resembles religious self-denial and purgation, even exorcism [IV, 30].

Along with the new induction goes a new discourse that enforces the experience of arduous, self-denying interpretation. "[B]orrowing the term from the sacred ceremonies," Bacon distinguishes "initiative" from "magistral" discourse. The former can break away from the false authority of idolatrous transmission of knowledge because it reenacts (and requires its reader, or perhaps only its wise reader, to reenact) the difficult inductive method by which the knowledge it communicates has been invented. Initiative discourse creates purgative rituals that resemble the few ceremonies of religion that Bacon is willing to call "things real." Religious fastings and other "humiliations of the body," Bacon argues, destroy idolatry by taking into "consideration" – literally, by commemorating, enacting, and resisting – the mind's profound dependence upon the wayward body (III, 369). The initiative ceremonies of science are supposedly the experiments by which idolatries are experienced reductively yet nobly, like the baths and fires of an enlightened alchemical manufacture of gold.

Probably the most suggestive site of this struggle is the Solomonic aphorism, which Bacon imitates in the *Novum organum*. The sacred aphorisms break knowledge into bits from which a deeper wisdom can emerge if the reader could resist being satisfied with the superficial, merely proverbial wisdom of Solomon's teachings. For Bacon, it is the ordeal of reading Solomonic discourse, refraining from giving one's inner being to desirable (hence wayward or premature) conclusions, which prepares one for a new synthesis of fragments. By similar means, Solomon is presumed to have written the natural history of Lebanon (thought to be lost, but now available in the New Atlantis if one get access to them). Even though his great achievements and possessions would have corrupted almost any king, Solomon was somehow able to impose upon himself the ordeal of studying the least of things. Thus he combined an enlightened, scientific monasticism with a wise epicureanism. He showed himself capable of taking immense pleasure in the power and luxuries that accrued to his prosperous reign, and yet he somehow made sure, Bacon insists, that idolatrous passions did not come rest in his heart or soul [IV, 114].

Bacon's second model of the initiatory man of science is, according to his own testimony, King James I, to whom he dedicates *The Advancement of Learning*. There Bacon explicitly compares James

to Solomon (III, 262), specifically praising him for his Solomonic power to see into the great and the small, the divine and the human (III, 263). He is "almost a miracle" because he combines the divine with the human, even though "it should seem an impossibility in nature for the same instrument to make itself fit for great and small works" (III, 262). Most notably, James is praised for his inquiries into witchcraft. He is Solomonic because he can immerse himself in worldly, even corrupt and threatening phenomena while inquiring into the laws and forms of things. He can interrogate what he considers to be the dangerous, misguided science of witchcraft, while keeping his kingship pure.

In his inquiry into witchcraft, James has dared to write the sort of natural history that true initiates must scrutinize, experience, and ponder. Looking ahead, Bacon calls for an even more comprehensive and "severe collection" of things in nature that have undergone "digression and deflexion from the ordinary course" (III, 330-1). James's work contributes to the "superstitious" natural history Bacon wants to see expanded to include witchcraft, dreams, and divination:

... it is not yet known in what cases, and how far, effects attributed to superstition do participate of natural causes, and therefore howsoever the practice of such things is to be condemned, yet from the speculation and consideration of them light may be taken, not only for the discerning of the offences, but for the further disclosing of nature. (III, 331r)

Superstition, which mixes heresy with grotesquery and silliness, is an ideal subject for the new sciences because it requires its enlightened students to undergo a Solomonic initiation:

Neither ought a man to make scruple of entering into these things for inquisition of truth, as your Majesty hath shewed in your own example; who with two clear eyes of religion and natural philosophy have looked deeply and wisely into these shadows, and yet proved yourself to be of the nature of the sun, which passeth through pollutions and itself remains as pure as before. (III, 331r)

What makes the danger endurable? James, like Solomon, is protected by the eye of religion, for him the foundation of a king's divine right. King Solomon petitioned for, and received from God, a "grant donative" which enabled him to write the aphorisms of the wisdom literature and natural history as God's favorite (III, 298). The

assurance of divine favor made him capable of extraordinary self-assurance and prodigious restraint: he made "no claim to any of those glories" even though (or because) he was God's favorite (III, 299, 220). For understandable reasons, Bacon scrupulously avoids referring to James's shortcomings; neither does he mention Solomon's succumbing to idolatrous lust – and his fall from divine favor. But in the end he does not need to avoid the story of Solomon's fall because Sapience according to Bacon's definition is recoverable if it is wisely discovered and interpreted by means of the new sciences' collective machinery, which is supposed to possess an unwavering power to test inquirers and their findings.

The initiatory function of the new machine is perhaps what Bacon had in mind when he formulated his famous proverb that nature, to be mastered, must be obeyed. Power cannot come but through submission, and yet submission, particularly when it is undergone by a group of wise inquirers, promises empire. How then can the Solomonic researcher proceed so as not to unleash the lusts that brought down his Solomonic precursor? The fact that the new sciences depend upon cooperation and disinterested validation is not in itself an assurance that the entire enterprise will not go the way of a corrupt king.

#### IV HUMILITY, CHARITY, AND SABBATH

In Bacon's scheme of things, the truth of scientific works is measured according to their lack of vanity. Those works must not come from vain imaginations, from a desire for power or fame, or from the wish for comfort (IV, 21, 73). They must and can be the works of charity, "the virtue most communicative of good" (IV, 338). True knowledge is dedicated to "the benefit and use of life"; it must be actively charitable (III, 218, 221-2; V, 9). But benefit and use are not enough. The new sons of science must follow the Apostle Paul's example of humility in 1 Corinthians: they must strive to endure all things, even as their obedience to nature brings ever greater control and comfort (III, 265-6). Without self-denying, perfective suffering, the new learning's revelation that knowledge is power threatens to plunge its practitioners into perdition, as did the proud knowledge that cast down Lucifer and Adam (IV, 21; V, 132; VII, 222, 243). And if they are successful in experiencing wisely scientific suffering, can

they undergo the experience without creating a self-ingratiating idolatry of humility?

The end of the new sciences, as Bacon says in the *Novum organum*, is a "sabbath" attained not by scientific labor alone, but by that labor for the sake of providing mankind with rest from hardship (IV, 33). Scientific charity must therefore be a labor for the sake of an extraordinary release from labor, presumably to be enjoyed mostly by the masses. But those masses, according to Bacon, not only do not know the ways of science; they do not know how to escape the new idolatries that are bound to arise from the pleasures that charitable science bequeaths them. For the sake of combatting idolatry, the enlightened makers of those pleasures must therefore rule. Can they take on this responsibility without taking ever greater pleasure in their radical superiority, or despising their vulgar beneficiaries, or yielding to the growing temptation to let the recipients of their charity worship those who seem to give them their happiness? And what besides corrupting pleasures can prevent the beneficiaries of the new sciences from becoming resentful slaves?

Given the new sciences' problematic dependence upon (and resemblance to) Christianity, what then keeps Bacon's advancement of learning from becoming a powerful heresy? Bacon supplies two apparently contradictory methods of protecting the new sons of science from apostasy. First, he surprisingly reminds his readers that contemplation takes precedence over the active life. In his well-known aphorism equating knowledge and power, his emphasis is on the practical precedence of contemplation over "operation" as well as use. Nature must be studied and "obeyed" before its laws can be exercised: "Human knowledge and human power meet in one; for where the cause is not known the effect cannot be produced. Nature to be commanded must be obeyed; and that which in contemplation is as the cause is in operation as the rule" (IV, 47). Bacon praises Solomon most for his detection of concealed laws of nature, not for the fruits he brought forth with them (IV, 114). Moreover, he insists that "works themselves are of greater value as pledges of truth than as contributing to the comforts of life" (IV, 110).

Bacon's second defense, however, casts doubt on the first. The faith of the sons of science, he argues, will ultimately be justified by the *fruits* of their intellectual labors. Such fruits are much more than benefits because they are supposed to exhibit the benefactor's faith:

"Wherefore, as in religion we are warned to show our faith by works, so in philosophy by the same rule the system should be judged of by its fruits" (IV, 74). Elsewhere Bacon explains that the charitable deeds of the new sciences serve as "the seal which prints and determines the contemplative counterpart" (IV, 121). This means that even though contemplation precedes the work in terms of significance and time (as it does in Genesis 4.125), the work that science does is somehow equivalent to – and generative of – scientific contemplation. The practical applications of knowledge not only reveal the laws of natural operation, works justify and determine wisdom. This paradoxical relationship between contemplation and action must be embraced faithfully so that it does not cultivate new forms of vanity:<sup>12</sup> "[M]an is a god to man" when he provides charitable inventions (IV, 114). Man's scientific works are "blessings" superior to any conquest over men because they apparently "confer benefits without causing harm or sorrow to any" (IV, 113). But if "[h]uman knowledge and human power meet in one," can human beings fuse these things without reducing knowledge to power, wisdom to willful force?

Bacon's earliest explicit formulation of the idea that "knowledge is power" is instructive because it occurs in an explicitly religious context: the *Meditationes sacrae*. There he refers only to the knowledge and power of God, intimating that their convergence is beyond human understanding (VII, 253). Two decades later this formulation becomes, in the *Novum organum*, the famous and problematic justification for human beings to equate knowledge with power (IV, 32). It is problematic because, by Bacon's own standards, charitable acts performed by the new sciences are eminently susceptible to imitations performed by charlatans. The trademarks of the false, idolatrous sciences such as traditional alchemy and astrology are fantastic promises of what the new sciences would routinely offer: power to change metals and history at will.

Perhaps the most powerful temptation facing the scientific charitable impulse has to do with the huge gap between Solomonic science and common ignorance.<sup>13</sup> Both the old and the new sciences are irrevocably conditioned by common ignorance: Bacon speaks with contempt of the inevitable vulgarization of sciences in the public, political sphere: "there is but one form of polity in the sciences; and that always has been and always will be popular." For Bacon, what is

popular is generally bad because the superstitious masses embrace pseudoscientific doctrines that are either "contentious and pugnacious" or "specious and empty" (IV, 15). In the *Novum organum* he goes so far as to argue that the new sciences "cannot be brought down to common apprehension, save by effects and works only" (IV, 113). Effects indeed reveal the laws of their causes, but only to those who wisely endure a proper initiation and the proper experimental procedures. Vulgar recipients of the sciences' largesse will not only be ignorant of the laws of nature and the sources of the technology that governs the sciences' gifts to them. They will not be equipped to know what might be the deeper purposes of those gifts if the givers' charitable intentions are not pure and obvious.

Whatever then might be the charitable sciences' appearance of harmlessness and philanthropy, they will be cryptic. Bacon observes that the new sciences, like religion, are "adverse to common sense" (III, 503). They must arise from an initiatory ordeal and a Solomonic sanction that most of the beneficiaries of their gifts neither know nor experience. Given the idolatrous corruption of men's minds, the new sciences must transcend vulgar popularity by developing their own polity of kingly charity: they must undergo and exploit the discipline of living magnanimously, splendidly, and secretly – as Bacon praises the Solomonic James for doing. The virtues and grace that are the source of the scientific king's charity are "sequestered" within "the strangeness and darkness of this tabernacle of the body" (III, 262). For Bacon, good scientific government is therefore hidden government, though he assumes that the good governor will have a visible prominence in human affairs. The scientific king rules very much as the heavens declare the glory of God, but not God's divine will (III, 478). Of course, the king ought to be in communication with the common people: "all things ought, as far as the frailty of man permitteeth, to be manifest and revealed" (III, 474). But his communication is cryptic in its imitation of God's occultation of the laws that govern nature. These laws, though they are hidden in order to be discovered, are profoundly remote from the masses who know them only by their superficial effects. Their source in the king's will is beyond any commoner's inquiry.

Scientific principles do come to light as technologies are exposed to public view; but in the Baconian world, scientific innovation inevitably runs ahead of public perception, along trails that are only

selectively open to scrutiny. The premium that Bacon puts on intelligent and full disclosure, sincere revelation of sharable doctrines, and charitable applications must be understood in the light of his interest in spying and encryption, whose business is to protect from disclosure the most important activities of the king and the sons of science.

#### V SCIENCE, NATURE, AND THE DIVINE CODE

The quasi-religious importance of the principle of encryption in the new sciences is evident in Bacon's theory of codes. Whereas ordinary induction and inference are capable of making only accidental inferences, Baconian induction deciphers nature's code not just by thwarting the common love of making analogies, but by gathering interpretations from "very various and widely dispersed facts," materials so divergent from one another that they "seem harsh and out of tune; much as the mysteries of faith do" (IV, 52). This is Bacon's heuristic for reading prophecy, the wisdom of the ancients, and the wisdom of Solomon's aphorisms. Solomon's and Bacon's discourses present themselves as accessible – in fact highly appealing – forms of edification. But they offer more cryptic, quasi-religious readings when their wise interpreters read them dispersedly, by experiencing the harsh juxtaposition of the common with the adverse and the remote. The best natural history is therefore one of "digression and deflexion from the ordinary course." Collecting curiosities is not sufficient. There must be "a substantial and severe collection" (III, 331), one that requires "trials and vexations" so that nature and inquirer are "crossed" just as the prophet Proteus was when Menelaus captured him for his secrets (III, 333).

The best code hides something valuable in something mean or opaque. Thus we have gunpowder and the compass, discoveries from easily ignored, lowly sources. Such breakthroughs evoke wonder because they confound expectations. Yet their apparent indispenability tends to reduce them to ordinary things. Bacon observes that codes, once they are broken, become all too obvious and expected. Heroic decipherment changes the Sphinx-like mystery of science into a public carcass (VI, 757), and so risks creating new idolatries when the vulgar classes believe that they have mastered science, or that they should be entertained or awed by the unexpected.

Science can retain its true nature as a deciphering ordeal only by keeping its most important secrets. But does this then mean that the difficulty of the new sciences determines their truth? Is scientific decipherment merely (or perhaps impossibly) a process of searching for what one is least capable and least expectant of finding? Basing the advancement of learning on radical encryptions and decipherments, which change enigmas into revelations and seem capable of transforming everything into everything else, seems to encourage lassitude and recklessness as much as ingenuity and wise prudence.<sup>14</sup>

Bacon is of course acutely aware of this possibility, since he finds it typical of the pedantry and idolatry of the old learning. Whether he is a new man of science or an idolater, man's mind is an enchanted glass. Even his machines, which expand his vision of some things, tend to reflect his self-deluding image. There would seem to be no escape from idolatry; were it not for the mind's being a God-given thing. Despite its love of vain imaginings, the enchanted glass is "capable of the image of the universal world" (III, 220). To Job and Solomon, it intimates visions of divine motions (III, 222, 298–9). "[T]here seemeth to be a liberty granted, as far forth as the polishing of this glass." The mind might indeed afford a person "some moderate explication," an illumination of the "enigma" that is the anagogical meaning of the Scriptures (III, 485).

What then is "moderate explication" of such important matters? When Bacon sets to work translating and revising *The Advancement of Learning*, he retains his discussion of scriptural illumination, but omits the emphatic warning against overreaching (V, 117–9). He defines correct explication by modifying and in some instances omitting strategic sentences. In the first version, for example, he identifies four prohibitions on the aspirations of the sciences. The inspired author of the Scripture knew four things, Bacon argues, "which no man attains to know": "the mysteries of the kingdom of glory; the perfection of the laws of nature; the secrets of the heart of man; and the future succession of all ages" (III, 485). But Bacon's later, Latin translation leaves out the first two proscriptions, and goes on to emphasize the second pair: "there are two things which are known to God the author of the Scriptures, but unknown to man, namely, the secrets of the heart, and the successions of time" (V, 117). Why these changes?

Bacon's Latin protects two possibilities: that man might "attain"

to knowledge of the kingdom of glory and that he might gain the "perfection" or full knowledge of the natural laws. The mind that sees through a glass darkly can see more than we think when the new sciences polish it. When Bacon describes the true scientific induction that is made "as if by divine fire [*tamquam ignem divinum*]" (IV, 145; I, 257), he could mean that reason is quasi-divine in the ancient sense (open to inspiration), or assisted by revelation, or capable of directing fiery scourges that have the sanction of religion. The *De augmentis* does maintain two prohibitions on scientific activity: the bans against inquiry into the succession of the ages and against inquiry into the secrets of men's hearts. Yet these rules are severely tested by the new sciences. Bacon's writings are full of speculation about divine motive and the shape of history, and the shadowy character of kingly and courtly intentions. From the time of his earliest publication – the 1597 *Essays* – he moves toward a social science dedicated to decoding and working the minds of men, despite (or rather, because of) his warning against the manipulation of souls. Minds and natural matter become remarkably similar objects of scientific study, both revealing themselves most tellingly under the pressures of extreme circumstances.

Paradoxically, Bacon introduces a form of inquiry into men's minds that is all the more permissible because it is supposedly separate from inquiry into the heart of men's faith. No one but God, Bacon assumes, can know the truth of a soul's piety. Yet declaring the spiritual soul beyond the reach of the new sciences frees the investigator to inquire into and test men's spirits as though he could do the soul no harm. Again, Sprat's clumsier formulation sheds light on Bacon's sophisticated one. Advocating the scientific study of "spirits" and "blood," Sprat looks forward to a time when investigators can make "neer ghesSES . . . even at the more exalted, and immediate Actions of the Soul; and that too, without destroying its *Spiritual* and *Immortal* Being."<sup>15</sup>

The scientific freedom that results from putting the soul and divine intention off limits has an effect on what the new scientists can say about Providence. A probing scientific interpretation of the history of prophecy is permissible precisely because it does not presume to prognosticate about what is inscrutable (III, 341–2). If it is known that Providence works its radical opposite, the sons of science have at their disposal a ready means of knowing the unimagined

able without seeming to anticipate what that pattern is. If they accept the paradox, they can know and remain ignorant at the same time. This seems to be the tenor of Bacon's reference to a Providence that "contrives out of subjects peculiarly empty and destitute of providence, and as it were blind, to educe by a fatal and necessary law all the order and beauty of the universe" (VI, 731r). Strangely, interpretation draws tremendous power from the assumption that the created world is inscrutable.

Respect for religion in this sense licenses the new sciences' radical inquiries not only into the affairs of the created world but into Divinity itself. Thomas Sprat's account of the origins of the Royal Society in the ebb tide of civil war sheds light upon the next generation's willingness to open new frontiers of inquiry in the name of pious restraint:

... I should not doubt (if it were not somewhat improper to the present discourse) to prove, that even in Divinity itself they [the nonscientific writers of the past] are not so necessary, as they are reputed to be: and that all or most of our Religious controversies, may be as well decided, by plain reason, and by considerations, which may be fetch'd from the *Religion of mankind*, the *Nature of Government*, and *human Society*, and *Scripture* itself, as by the multitudes of Authorities, and subtleties of disputes, which have been heretofore in use.<sup>16</sup>

Rather than simply make science religious, Sprat is confident that scientific inquiry will help save religion from controversies that have defined religious outlooks for generations. Sprat's daring claim is not too far from the point of Bacon's editorializing translation of the Ninetieth Psalm, a prayer by Moses, which hints at God's offer of natural as well as divine wisdom through "holy lore" that might be disclosed to initiates. The Baconian version tells of the punishment that awaits idolaters who presume to find lore in dreams devoid of religion:

Both death and life obey thy holy lore,  
 ...  
 Thou carriest man away as with a tide:  
 Then down swim all his thoughts that mounted high:  
 Much like a mocking dream, that will not hide,  
 But flies before the sight of waking eye . . . (VII, 279)

In the King James Version, which is closer to the Vulgate, the passage conveys neither Bacon's explicit promise of knowledge nor his mocking of vain dreamers:

Thou turnest man to destruction; and sayest, Return ye  
 children of men.  
 ...  
 Thou carriest them away as with a flood,  
 they are as a sleep . . .

Elsewhere Bacon reminds his readers that Orpheus is a pious poet, and that myth as well as Scripture can extend scientific wisdom into divine lore – but only if the investigator is appropriately prepared and proceeds with the proper method. Poetry "was ever thought to have some participation of divineness" (III, 343). In the preface to the *De sapientia veterum*, Bacon contends that ancient myths are a "method of teaching" that is "sometimes indispensable" to the sciences. Using a phrase that he repeats in the *Novum organum*, he argues that "religion delights in such veils and shadows, and to take them away would be almost to interdict all communion between divinity and humanity" (VI, 696). Although the ancient and prehistoric poets knew not what they did, their works encode subtexts perhaps more venerable than the canonical Bible. In their radical ambiguity, fables resemble nature itself. In them idolatry and a kind of revelation intermix (VI, 712), for like the nature-god Pan, the created world is "in truth bifurmed and made up of a higher species and a lower" (VI, 711). Fables combine or mix the lowest world and the highest – the trivial with the profound – much as Providence did when Joseph was sold into Egypt for the sake of his later mastery of the Egyptian world (VI, 711). Properly initiated readers might interpret the fables for what they reveal about the world as "the great proclaimer of the divine wisdom and goodness," even though "the more secret judgments of God, sound somewhat harsh and untunable" (VI, 712–3).

God has made available in myth as well as nature "the true signa- tures and marks" that he has set upon creation (IV, 51). The person who becomes the true, chosen inquirer is like the untunable myth: he somehow manages to appear on the scene even though he is the unlikely prospect as a seer. In Bacon's mythography, Oedipus succeeds as such a hero because he hobbles, rather than rushes, toward

the Sphinx which Bacon calls Science. The hero has been prepared for the ordeal by a combination of election and perdition: the kingly wrath of his father, whose fatherhood made him the blood heir of Thebes, has bound Oedipus's ankles and cast him out to die (VI, 755-8). By the time the unlikely hero grows old enough to approach the Sphinx, he has therefore been mortified yet saved by his childhood. His paradigmatic mastery of science by enduring a "painful and cruel" method of approaching it exposes a disturbing, deeper meaning in Bacon's principle that the true sciences must resemble "the kingdom of heaven, wherinto none may enter except as a little child" (IV, 69).

Bacon's mythography indicates that in order to decipher the mingled code of the created world, the direct approach is almost as fatal as seeing God through a glass clearly. The vain scholastics, who presume without special preparation to engage the Sphinx, die in its claws. Pentheus, who climbs a tree to witness strange revels and so "penetrate the divine mysteries," is torn to pieces (VI, 720). Orpheus, who finds his yearning embodied in Eurydice, loses her when he turns to face her beauty, making himself vulnerable to the wrath of idolatrous enthusiasts. Conversely, when Diomedes (for Bacon, the embodiment of religious zeal) dares to overcome Venus by pursuing and wounding her, his own fervor makes him vulnerable to the rage of other zealots, who turn against Venus's pursuer when they think he has brought them misfortune (VI, 732-4).

In the pantheon of Bacon's *De sapientia veterum*, the inventive Prometheus is an overreacher who becomes a hero of the new sciences by indirect means. The reputation he makes for himself in direct action is ambiguous. He makes false sacrifices to the gods, along with true ones. He is both an idolater and an admirable figure: a type for "the truly religious man and the hypocrite" (VI, 750). Having formed man out of the elements and then journeyed to heaven to find fire for him, Prometheus aspires to win the praise of the human being he has made, but he fails. Mankind is not grateful. The gods become angry. Prometheus's ascent to the heavens for fire provokes their wrath, and they accuse him of assaulting Minerva ("divine wisdom" [6.752]). For his crimes he is bound to a rock where he suffers daily torture. Nevertheless, Bacon argues, it is good that Prometheus suffers. He needs more than his own heroic deeds. His shortcomings also reveal that human beings are dissatisfied

with mere pleasure. Their ingratitude masks their reverence for the "divine nature, with the perfection of which they almost presume to compare." Without the ingratitude that Prometheus stimulates, there would be no drive for perfection in the invention of "new discoveries" of useful things (VI, 748-9).

To gain the freedom that will release the inventive powers of man, Prometheus must undergo punishment for presuming to know divine wisdom. But that ordeal occurs in such a way that he receives a kind of liberatory grace that changes his irreverence into inventive power. The divine sanction is a training in wisdom. A savior breaks his bonds: the mighty Hercules, who sails to his rescue in a delicate cup given by the Sun. The hero's power to escape his torment is neither wholly religious nor wholly scientific. It

was not natural to Prometheus, but adventurous, and came by help from without, for it is not a thing which any inborn and natural fortitude can attain to; it comes from beyond the ocean, it is received and brought to us from the Sun, for it comes of Wisdom, which is as the Sun, and of meditation upon the inconsistency and fluctuations of human life. (VI, 752)

Although Bacon does not speculate further about the religious ramifications of the myth, he cannot refrain from intimating that "there are not a few things beneath" the fable "which have a wonderful correspondency with the mysteries of the Christian faith" (VI, 753).

Is it grace, then, that finally enables Prometheus to transcend idolatrous vanity, and so to become one of the greatest founding heroes of the new sciences? Bacon seems to bow to this conclusion in the last paragraphs of his mythography, where he says that the superior means of overcoming the Sirens, whose fatal temptations distract and stymie the advancement of learning, is "religion" manifested in the praises that Orpheus sings to God (VI, 763-4). But if Orpheus is a more complete example of the religious scientific hero, his history is more problematic. Orpheus uses his song to spare the Argonauts from the fatal sounds of the Sirens' calls. In pious song, he faces the danger without mechanical aid (VI, 763) and so seems superior to the Promethean Ulysses who must be tied to a mast. But by drowning out the sounds of temptation, he undermines the Argonauts' scientific virtue as explorers of the unknown. The religious devotion of Orpheus's singing removes his friends from the ordeal of temptation which, elsewhere in Bacon's works, defines scientific

virtue. Eventually Orpheus himself will succumb to temptation when he turns toward Eurydice. Religious poetry does not save him from what Bacon calls idolatry. Is the ordeal of the Baconian hero then simply too dependent upon religion or too arduous, his receipt of grace too arbitrary or "adventitious" for true science to be methodically pursued?

## VI RELIGION IN THE NEW ATLANTIS

To explore the extent of Bacon's thinking about these matters, it is worth going to the *New Atlantis*. For it is in his account of Bensalem, the visionary island upon which science grows from archaic roots and modern prophecy, that we see Bacon most fully permitting himself to indulge and explore the notion that a kind of religious devotion is the gate and the problematic end of the new sciences.

Bensalem is a kind of heaven, and the almost broken seafarers who stumble upon it are happy to be its prisoners rather than commercial adventurers who have learned that their desire for mere profit has made them eminently vulnerable to death. The island society seems "a picture of our salvation in heaven" after the rescue. The hoped-for (yet unlooked for) harbor is an entrance into a "happy and holy ground" that offers them "nothing but consolations" (III, 136). Almost all of Bensalem's attention seems to be given to performing charitable works (III, 156, 166). The lost sailors think they have entered a "divine pool of healing" that is later called "Water of Paradise" (III, 135, 158). Calling Bensalem "a land of angels," they bow before their governor, who seems to have power to extend their lives as well as to deny them treatment.

King Solamona, "the lawgiver of our nation," seems to have embodied this principle in his kingdom when he exercised his "large heart" — his desire to make everyone "happy" — and barred almost all strangers from the island (III, 144). In closing Bensalem to almost all outsiders, he wished to avoid the fate of China, whose open door to strangers made that country superstitious, and whose subsequent prohibition against all outsiders was an act of fear. Bensalem's apparently more moderate policy toward strangers now exerts a power which Bacon's narrator calls "divine." To avoid China's double excess of permitting all strangers or welcoming none, Solamona promoted enlightened sciences in a house of se-

crets and instituted comprehensive surveillance of the rest of the world for the sake of Bensalemite happiness. The regime thereby took on a kind of divinity, charitably revealing some of its work while concealing the most important powers that made it possible. It seems impossible that Bensalem could gather such extraordinary intelligence without showing itself to that world, or compromising its own institutions. As the house's governor concedes, a place so open to the outside yet immune to scrutiny seems to operate with occult power: it is "supernatural" (III, 145).<sup>17</sup> The things it does reveal, in the form of artifices that provide health, power, wealth, and convenience, are easily (if not accurately) taken to be angelic or magical manifestations of deep natural laws — as though the Bensalemite's wonderful conversion of effects into causes were telegraphing, by means of their inventions, the notion that nature is an encoded communication between God-given nature and man.<sup>18</sup>

Long ago, when the Scriptures appeared to the people of the island under a pillar of light, a Bensalemite scientist was able to approach the holy book and certify that it was indeed miraculous (III, 137–8).<sup>19</sup> It is difficult to determine whether his interpretation was a pious reflection on his previous knowledge of the book of God's works, or a wise appropriation of religion into science. Bensalemite science precedes the arrival of Christianity on the island, and so it might not need orthodox religion except as a cover for its work. When the narrator himself says "It is a kind of miracle [that] hath brought us hither" (III, 134), he is being faithful to the experience of being saved by charitable souls from near death at sea. But when we later hear that the Bensalemite researchers have mastered the winds, the possibility arises that the sailors were first brought near death, and then saved, by means of a preternatural force that was engineered inside the College of the Six Days' Works.

Like Orpheus, Bensalem's men of science sing hymns daily to ward off the furies that tempt the users of power (III, 166). The Bensalemite scientists observe an oath of secrecy, and supposedly adhere to strict rules against using scientific knowledge merely to make strange effects (III, 164). However, the scientific and political workings of Bensalem's strange polity, unlike the workings of More's *Utopia*, remain almost entirely cryptic. The government of the island, particularly the relationship between the researchers and the rulers, is undisclosed. More's *Utopia* is literally a "nowhere,"

dependent upon the obviously implausible abolition of private property. By contrast, Bacon's island gives the impression that it has been on earth for some time. Its fusion of faith with the practical power of the new scientific engineering is presented as though it were eminently reasonable, though its rational and political foundations are remarkably obscure. A profound doubleness is built into Bensalem's political and scientific constitution.<sup>20</sup>

The great miracle, or near miracle, of Bensalemite science is the prolongation of life, including resuscitation of things that "seem dead" (III, 159). Bacon warns in the *Historia vitae et mortis* against the idolatrous love of long life for its own sake (V, 266). But he focuses on extending life without being too much concerned about its natural limits. More than the mere eradication of disease, his goal is the extension of life. Given this priority, the sons of science might profitably turn their interest toward the vivifying powers of superstition: Bacon notes that philosophies that "have some touch of superstition" are conducive to longevity (V, 263).

Christianity is itself the religion of the physician, since Christ's miracles most resemble the workings of medicine, whose chief function is "prolongation of life" (III, 377, 373). The lengthening of life is "of earthly gifts perhaps the greatest – of which, next to God, they [physicians] may become the dispensers and administrators." Their gift is as a "divine grace" (IV, 390), even though they prolong lives that are not assumed thereby to be divinely distinguished. Long life is supposedly not in itself the result of "grace or holy line," but longevity does provide the means to prolong the exercise of charity. Bacon is careful to note that this was the case with "the beloved disciple," John, who outlived the rest (V, 243, 306, 217). Does this highest Baconian endeavor – the prolongation of life – arise from and perhaps extend the reach of religion and charity, or is it more simply a useful, perhaps debased, secular adaptation of religious concerns and doctrines of salvation?

#### VII EPILOGUE: THE SONS OF SCIENCE

Bacon's new sciences are supposed to do their highest, vivifying work upon the "spirit." Bacon usually maintains that the spirit of all tangible bodies, including human beings, is fundamentally distinct from the rational soul that is the subject of religious ministrations.

Yet he observes that the spirit is "the organ of the reasonable soul" (V, 335). In the last entry of the *Sylva Sylvarum*, he looks ahead to a science of spiritual influence: mastery of the distance-defying, crowd-animating influences that are exerted by sympathy, envy, admiration, ambition, and perhaps more ethereal functions of the reasonable soul. Such a science would be eminently qualified to mix science with religion, for it seems "as if all spirits and souls of men came forth out of one divine limbus" (II, 672).

What is most disturbing about this exhilarating prospect (as D. P. Walker has observed) is that Bacon almost entirely avoids discussing the higher soul that was traditionally understood to shape and interpret these influences. He relegates the study and care of that soul entirely to Divinity, while developing the idea of an invisible, bodily spirit that behaves much like the spirit of alcohol.<sup>21</sup> The *Essays*, which counsel the political, ethical, and religious concerns of the reasonable soul, are most essentially collections of advice about wise technique. Their moral and political instruction is an encoded version of Bacon's inquiries into motion, power, and antithetical wisdom.<sup>22</sup> The poverty of the explicit Baconian doctrine of the soul is symptomatic of what Laurence Berns has called Bacon's "failure to develop the expected human philosophy" that would help modern science avoid becoming a philosophy of sheer power.<sup>23</sup>

Inheritors of Bacon's legacy of divinity-purged yet strangely pious science face the challenge of considering how to order their moral and political lives, along with their understanding and use of science, on the basis of what is known about nature and human nature, and the possible existence of something higher. What sort of guidance do Bacon's paradoxes offer for thinking about human conduct and human aspirations, once their covering of conventional religion dissipates or is taken for granted? The new Baconian sciences depend upon faith in the existence of the maker's code; but in discovering that cipher, they deny in principle the possibility of truthful, ordinary trust in the visible world.<sup>24</sup> Depending upon the charitable good sense of scientific practitioners, the new sciences offer vast new powers that tempt the sons of science to rule absolutely under a cover of benevolence. Finally, they cultivate a high-mindedness that stimulates an iconoclastic contempt for motives that are not purely altruistic.

While the new Baconian sciences amplify the importance of religion as a counterweight to their tyrannical possibilities, one contin-

ues to be struck by the depth of Bacon's systematic antagonism toward idolatrous, false religion. Paradoxically, his attack on idolatry in the very bones of individual believers, peoples, and institutions – and in the language of the marketplace of ideas – makes it increasingly difficult to distinguish between his opinion of traditional Christianity and his view of heresy, particularly when he promotes the enlightened manipulation of superstition for the sake of scientific ends. Science and false religion, liberation and domination, threaten to become the same thing. In the last words of the *Sylva Sylvarum*, Bacon himself warns against a “depraved” ambition for innovation that is “an affectation of tyranny over the understandings and beliefs of men” (II, 672). What now distinguishes the new sciences’ rule from that kind of tyranny?

Students of Bacon have often concluded that the case is moot: the new sciences are either too clearly charitable, too disinterested, to be tyrannical; or they are too bound up in the rhetoric of conquest not to domineer over the mass of humanity as they do nature. Religion is either an accidental, though perhaps welcome, contributor to the new sciences’ enlightened power, or it is one of the sources of ecological and social degradation.<sup>25</sup> But these positions do not do justice to the complexity of Bacon's debt to, and use of, religion. They do not adequately account for the tension between Bacon's solemnity, which moderns tend to underestimate, and the nearly grotesque, perhaps deeply subversive pretension of the New Atlantis's appropriation of religion for the sake of the new sciences.

We are the trustees of sciences that Bacon helped to make. With increasing powers, new sciences offer us the grace of longevity, and the challenge of finding meaning in long life. They give us tantalizing, often horrifying glimpses of more wondrous powers that might be within our ken. Too great a willingness to attribute power to these sciences, or to believe that they have vanquished religion, or that religion is immune to their claims, ignores our freedom to inquire into the limits of the new sciences as well as their reach. One of the outgrowths of the Baconian revolution is the encouragement to look into smaller things as well as *philosophia prima*, not to be transfixed by Baconian paradoxes which have a way of becoming idols that are as misleading as the four that Bacon analyzed. Baconian science works upon individual human beings, whom we still think of as being capable of inquiry, of making political, ethical, and

spiritual choices, whether or not they are sons of science. It is an open question whether the Baconian innovation and the great machine of modern science control those decisions, assist them, or have some other effect. They at least have failed, so far, to dominate the freedom of Bacon's trustees to worship, inquire, and choose.

## NOTES

- 1 This translation of *tamquam ignem divinum* (“as if by divine fire”) suggests that a kind of divine quality or agent might be needed in the process of the solution and separation. The English of Spedding's edition is less precise: the process is effected “by the mind, which is a kind of divine fire.” For drawing my attention to this anomaly, I am grateful to Berns 1978, p. 6.
- 2 Consensus over Bacon's religious affiliations, if any, is more elusive. Macaulay called him a theologian, and Aubrey wrote that he was a “sincere believer” in Christianity, *Brief Lives and Other Selected Writings* (New York, 1949), p. 118. Rawley concluded “This lord was religious” (I, 14). Bacon dedicated his translation of the Psalms to George Herbert, and a treatise on holy wars to Lancelot Andrews (VII, 11–15). His mother, it is well known, was a reformist Protestant. She criticized him, in a letter to his brother, for being “too negligent” about his prayers (VIII, 113); but this advice is better evidence of her almost meddling concern for his spiritual life, which was at least outwardly conventional. For an excellent, broadly based introduction to the larger question of how religion and science interact in Bacon's work, see Brooke 1991, especially pp. 52–81.
- 3 Thomas Sprat, *History of the Royal Society*, ed. Jackson I. Cope and H. W. Jones (St. Louis, 1958 [first published 1667]), pp. 5, 23, 57, 53–4.
- 4 For an elaboration of this reading of Bacon, see Kelly 1965.
- 5 See the extensive contemporary controversy over this issue in George Hakewill's *An Apologie of the Power and Providence of God in the Government of the World, Vindicating of God's glory, the advancement of learning, and the honour of the Christian and reformed religion* (Oxford, 1627), which is an essentially Baconian reply to Goodman's *The Fall of Man or the Corruption of Nature Proved by the light of our Naturall Reason* (1616, 1618, 1629).
- 6 Sprat, *History*, p. 72.
- 7 Sprat, *History*, p. 55.
- 8 Sprat, *History*, p. 132.
- 9 See Klaaven 1977, pp. 103–4.

- 10 See the essay "Of Superstition," Bacon's criticism of vulgar heresy in his reply to the Marprelate controversialists (VIII, 74–9), and the addendum to his copy of Camden's *Annales*, in which he refers to the 1591 conspiracy of one Hacket, "a man newborn from the vilest dregs of the Anabaptists" (VI, 356f).
- 11 For an example of how one idolatry can be used against another, see II, 634.
- 12 For a penetrating exploration of this ambiguity in Bacon's stress on charitable works, see Berns 1978, p. 4.
- 13 Thomas Sprat argues that Solomon's histories were exceedingly unusual because the Jews did not pursue natural philosophy, *History*, p. 15.
- 14 See Briggs 1989, pp. 15–24, 32–40, 142–3, and passim. To describe the power of turning everything into everything else, Bacon uses the phrase *omnia per omnia*. It is quite possible that he took the expression from the Apostle Paul's letters in the Vulgate Bible (1 Corinthians 9.20). There Paul describes how he undergoes the rigors of protean disguise, seeming to be a Jew to the Jews while seeking to convert them. It is Paul's orthodox and rigorous charity (in his words, the endurance of all things) that is supposed to justify his protean disguise and his decipherment of the resistances of the unconverted. The relationship between Bacon's employment of these principles and Paul's use of them is a subject worthy of further study.
- 15 Sprat, *History*, p. 33.
- 16 Sprat, *History*, p. 22.
- 17 A provocative discussion of these matters can be found in Renaker 1990.
- 18 See Melzer 1993, p. 294.
- 19 The ark came to Bensalem by natural as well as divine means: warned by an angel, the apostle Bartholomew had committed the book to the sea before it arrived in Bensalem. According to Eusebius's *Ecclesiastical History* (v. x.), it was indeed Bartholomew who first brought parts of the gospel to India (the Book of Matthew written in Hebrew). Bartholomew's *Questions and Book of the Resurrection of Christ*, apocryphal works mentioned by Jerome and Bede, consist of inquiries into the secrets of the virgin birth, the devil, and the resurrection – secrets that at first are said to be closed to inquiry because of their mortal danger to those who search them out. But Bartholomew and the other apostles succeed in hearing these secrets after they prostrate themselves and persist in begging to hear them, whatever the consequences. See *The Apocryphal New Testament*, trans. Montague Rhodes James (Oxford, 1953), pp. 166–86. It is not known whether or not Bacon had access to the Greek and Latin manuscripts of Bartholomew's books; but in choosing that apostle to be an agent of Bensalem's conversion, he selected a

- shadowy biblical figure who was associated in some traditions with gnostic lore.
- 20 Given the highly controlled nature of island life, it is remarkable that Chaldeans, Jews, Arabs, Indians, and Persians are residents of Bensalem. But Bacon explains how the Jews manage to live there, believing in the Virgin Birth and God's elevation of Christ to rule over the angels (III, 151). Their faith in the coming of their own Messiah is, says Bacon, a "dream." Still, he calls his Jewish informant, Joabin, "a wise man, and learned, and of great policy, and excellently seen in the laws and customs of that nation" (III, 151). Joabin's role as a social scientist, a master of the law, and a counselor to the great makes him a type for Bacon himself. When King David came to power in the vacuum left by the death of Saul's heirs, Joab became one of his chief counselors and champions (2 Sam. xix. 1–8; 1 Chron. xi. 4–9). King James resembles David not only in the circumstances of his accession, but in his putative role as the designer of a new Solomonic Temple. Perhaps the key to Bacon's ambiguous treatment of Joabin is Bacon's own scientific interest in the secrets of Solomonic wisdom. His narrator skeptically but carefully reports, without explicitly certifying its truth, that the Bensalemitic Jews believe in a "secret cabala" from Moses, which sets down their laws.
- 21 Walker 1972, p. 125.
- 22 See Briggs 1989, pp. 215–48 and passim.
- 23 Berns 1978, pp. 17, 1–26, passim. See also Weinberger 1985, Westfall 1958, Kocher 1953.
- 24 Charles Whitney has suggested that Bacon combines religion and science into a radically negative theology; see Whitney 1984.
- 25 For a wide-ranging and provocative discussion of these issues and a host of secondary references, see Melzer 1993 and other contributions in the same volume.