



PROJECT MUSE®

Francis Bacon, Natural Philosophy, and the Cultivation of the Mind

Peter Harrison

Perspectives on Science, Volume 20, Number 2, Summer 2012, pp. 139-158 (Article)

Published by The MIT Press



➔ For additional information about this article

<http://muse.jhu.edu/journals/posc/summary/v020/20.2.harrison.html>

Francis Bacon, Natural Philosophy, and the Cultivation of the Mind

Peter Harrison

University of Queensland

This paper suggests that Bacon offers an Augustinian (rather than a purely Stoic) model of the “culture of the mind.” He applies this conception to natural philosophy in an original way, and his novel application is informed by two related theological concerns. First, the Fall narrative provides a connection between the cultivation of the mind and the cultivation of the earth, both of which are seen as restorative of an original condition. Second, the fruit of the cultivation of the mind is the virtue of charity, which is understood not only as curing the mind of the individual, but as contributing to human welfare and ameliorating some of the material losses that resulted from the Fall.

In the autumn of one of the last years of his life Augustine delivered a sermon on the parable of the vineyard (Matthew 20: 1–16). The agricultural setting of this story afforded him the opportunity to rework a motif familiar to him and his educated auditors—Cicero’s celebrated formulation *cultura . . . animi philosophia est* (*Tusculanae disputationes* 2.5.13). Cicero had likened the uneducated individual (*animus sine doctrina*) to uncultivated land, before going on to identify philosophy as the means through which the mind should be cultivated.¹ For Augustine, however, it was not the spiritual exercises of pagan philosophy that wrought the culture of the mind: rather it is God who cultivates us as the farmer cultivates his field, rooting out bad weeds with his word, opening up hearts with the plough of his doctrine, planting the seeds of devotion, and waiting for the fruits to appear. Playing upon the various senses of the verb *colere*—from which our contemporary expressions “cult,” “culture,” “cultivation,” and “colonialism” all ultimately derive—Augustine also suggested that God culti-

1. For the ancient tradition of philosophy as therapy see Nussbaum, 1994, 1986, pp. 31–74; Sorabji 2002, Fitzgerald 2008.

vates us, and we cultivate (worship) him: *colimus enim deum, et colit nos deus* (Augustine, *Sermon* 81.7, 1997–2000 vol. III/3, pp. 407f. [PL 38, cols. 530–1]).²

Augustine's adaptation of the idea of cultivation and his attribution to the Deity of the central role in the process was in some tension with the Ciceronian notion of moral formation through the exercise of personal effort. For Augustine, without divine grace all efforts at self-improvement were destined to failure. While the philosophers might have had a dim apprehension of our moral inadequacies, they were bereft of the resources to redress them. Integral to Augustine's new prescription for the cure of the mind, therefore, is a redescription of the Stoic diagnosis of its ills: Stoic perturbations (Lat. *perturbatio*; Gk. *πάθος*) were recast in terms of Christian ideas of temptation and sin (Sorabji 2002; Colish 1985, pp. 142–238). Ultimately, sin could only be overcome with divine assistance, and its complete eradication would be postponed until a future life. Augustine also complicated the Stoic picture by placing the will, rather than reason, at the centre of his account, and by allowing a legitimate place for the passions in the well-ordered life (Sorabji 2002; Bouwsma 1975; Gaukroger 1998, pp. 1–14). This was not simply a re-described psychology based on introspection, moreover, for it drew heavily on the biblical account of the Fall. According to Augustine, as a consequence of the primeval temptation and subsequent fall of Adam, the human will is enslaved by sin. The historical origin of sin had no counterpart in the Stoic account of perturbations, but for Augustine it provided a key insight into the human condition. At the very least, the inherited malady of the mind that results from sin is such that the resources of philosophy are altogether too weak to effect a cure—partly because philosophy had never correctly identified the source of the mind's ills, partly because without divine grace no human regimen is sufficiently potent. It is in this sense that we are to understand Augustine's insistence that Christianity is the one true philosophy and that it offers the only efficacious medicine of the mind (*Contra Julianum*, 4.72 [PL 44. 774]).³

Owing to the pervasive influence of Augustinian thought, the Latin

2. Augustine himself points to the polyvalent nature of the word *colere*. *City of God*, Bk X, ch. 1. See also Williams 1976; Niedermann 194; Markus 1993. For other Patristic uses of the “cultivation” motif see, e.g., Origen, *The Song of Songs, Commentary and Homilies* III.10; John Cassian, *Conferences* 1.xxii; Gregory of Nazianzus, *Orations* 42. 4.

3. In *De Vera Religione* 24.45 Augustine explains that Scripture contains the medicine of the soul, and replaces the tree in the Garden of Eden. Augustine nonetheless retains a place for *disciplina* in the medicining of the mind. *De Moribus* 1.28.55–56. For Augustine on the cure of souls see Kolbet 2010.

West came to understand redemption in terms of the healing of a fallen human nature. (Eastern Christianity, by way of contrast, saw the goals of the religious life more positively in terms of *theosis* or the union of the soul with God.) Accordingly, Augustine's view of the cultivation of the soul tended to predominate during the Middle Ages. Anselm of Canterbury, in an extended gloss on I Corinthians 3:9 (*Dei agricultura estis*—you are God's husbandry), points out that human hearts, left to themselves, bring forth nothing useful. However, when seeds planted from scripture are cultivated by the Holy Spirit, human souls progress towards salvation (*De concordia* 3.6). Aquinas also rehearsed the Augustinian conception, while other medieval authors took up Augustine's imaginative conflation of cult and cultivation, speaking of the *cultura Christi* and *cultura Dei* (Aquinas, *Summa theologiae* 2a2ae. 81, 1; *Catena Aurea* vol. 2, part 2; Bonaventure 2007, p. 758). These images were reinforced by depictions of Christ in material culture: Jesus appears as a gardener in paintings and biblical illustrations, on misericords and in coloured glass, often bearing tools for digging and planting (Otten 1985, p. 14). The characteristically Augustinian position, sharpened by the controversy with Pelagius, that virtue is cultivated in the soul by God rather than by human effort, also found its way into the well-known formulations of Lombard and Aquinas: "Virtue is a good quality of the mind, by which we live righteously, of which no one can make bad use, which God works in us, without us" (Lombard, *Sent.*, 2.27.1, Aquinas, *Summa theologiae* 1a2ae. 55, 4. Cf. Augustine, *De Libero Arbitrio* II, 19). Virtues are infused, rather than acquired (as Aristotle had it). In addition to virtues, Aquinas speaks of gifts, beatitudes, and fruits—the latter drawing on the notion of "fruits of the spirit," but also calling to mind the metaphors of cultivation of the virtues (Aquinas, *Summa theologiae* 2a2ae. 47–170; Gal. 5:22–3).

From about the end of the fifteenth century, however, we witness the beginning of the flourishing of Neostoicism, and along with it elements of the Ciceronian conception of *cultura animi*. This reappearance prompts two questions: first is the general question about the context of the revival of Stoic thought, and how early modern writers dealt with the incipient tension between Stoic and Christian moral ideals, represented respectively by Cicero and Augustine.⁴ The second question bears directly on the theme of this paper: how did Bacon appropriate this tradition and what were his likely sources?

4. This issue is complicated by the fact that aspects of Stoic thought had been incorporated into Patristic writings and, arguably, even the New Testament itself. See Colish 1985, vol. 2, pp. 142–238.

Mental Disciplines and the Disciplinary Society

One important element of the historical context of the rise of Neostoicism was what Charles Taylor has recently described as “the rise of a disciplinary society” (Taylor 2007, pp. 90–145). While Taylor is the most recent to have drawn our attention to this feature of the early modern West, for some time, and in various ways, historians have mounted similar arguments. The basic idea is that at the dawn of modernity we see in Western Christendom a drive to reform society, to demand that the whole of human society be held to higher standards. Jean Delumeau (1977), for example, has contended that in the early modern period religious elites, Catholic and Protestant alike, sought to extend to the general populace a religious discipline that once had been the preserve of monastic communities. These attempts reached their zenith at the turn of the eighteenth century. The prelude to this development, according to Delumeau, was the “culpabilisation” of Western culture—a widespread inculcation of a deep sense of guilt and culpability (Delumeau 1983). This was followed, by the “Christianization” of Europe, which in turn eventually provoked the reactions of the Enlightenment. Neostoic ideals of the cultivation of the mind or the medicining of the mind found a congenial home in this new social context.

Another aspect of the broader context of the rise of Neostoicism is the religious conflict that followed in the wake of the Protestant reformation. In his influential *De constantia in publicis malis* (*On Constancy*, 1584), Flemish humanist Justus Lipsius sought to fuse Stoicism and Christianity in such a way that it would offer solace to individuals living through the tribulations of a Europe riven by sectarian disputes and internecine wars.⁵ This constancy was to be achieved through establishing the rule of reason over passions and false judgements. This moral programme would have the dual consequence of serving both as a private consolation for living in times of turmoil, and as a partial prophylactic against the social and political conditions that gave rise to that turmoil in the first place. This bivalent character of the project is evident in Lipsius’s insistence that good citizenship is a key ingredient of the moral life of the individual (*De constantia* I.12). More broadly, his transformation of Stoic fate into divine providence and his subtle modification of the Stoic virtue of *apatheia*, offered a model of how Stoicism could be reconciled with Christianity. This model resonated with elements of both Calvinism and Catholicism.

Lipsius’s reference to “good citizens” points us towards the fact that another, well attested manifestation of the disciplinary society was the emer-

5. For the impact of Lipsius in England, see McCrea 1997. On the influence of Stoicism more generally see Todd 1983; Chew 1988; Jalobeanu 2008.

gence of the modern state, where polities were given to instituting much tighter moral control of the activities of their citizens. Gerhard Oestereich argues that Neostoic ideals were integral to early modern states, which were characterised by the imposition of order from above by means of state bureaucracy. This imposition was frequently reinforced “from below,” as it were, by Calvinism and pietism (Oestereich 1982, pp. 72f.). Philip Gorski has similarly linked a “disciplinary revolution” in early modern Europe to the rise of the state. He, too, points to the role played by Neostoic philosophy, but argues (in a manner somewhat redolent of Weber) that Calvinism and Pietism were even more significant factors. For this reason, he argues, the disciplinary society was established far more effectively in countries influenced by Calvinism than in Lutheran and Catholic territories (Gorski 2003). In these polities, we see a classic Augustinian understanding of the state with its coercive powers as a divinely ordained instrument for the control of fallen human beings (Augustine, *City of God* XII.27; Nederman 1988; Hankins 1990, vol. 1, pp. 142f., 227–32).

Clearly, then, Neostoicism seems to have significant implications for moral and political philosophy in the early modern period, and there is a body of secondary literature that addresses these connexions. But what about natural philosophy? One possible avenue of investigation is to consider what might be called the regimens of experimental natural philosophy, understood as involving a distinctive kind of mental discipline—one that bridges the philosophical, moral, and scientific realms. We get intimations of this in natural philosophical discourse in Descartes’ emphasis on “rules” and “method” and in Robert Hooke’s talk of the need for “methodical proceedings in the making experiments and observations.”⁶ The insight that the notion of a *cultura animi* might be applied to natural philosophy offers one way of locating the emergence of modern science within this broader context of the move for moral reform in early modern Europe. The emergence of an experimental natural philosophy, in other words, can be related to the rise of the disciplinary society and, indeed, might represent one of its enduring legacies. Related to this is the way in which the seventeenth century witnesses a partial revision of the Augustinian priorities in relation to the culture of the mind. Augustine, we recall, contended that the real *cultura animi* is Christian religion. However, part of the subtext of Lipsius’s *De constantia* was that religion was not the cure for pertur-

6. Hence Descartes’ *Regulae ad directionem ingenii* (*Rules for the Direction of the Mind*, 1626–1628) and *Discours de la méthode pour bien conduire sa raison, et chercher la vérité dans les sciences* (*Discourse on the Method of Rightly Conducting One’s Reason and of Seeking Truth in the Sciences*, 1637); and Robert Hooke’s “A General Scheme, or Idea of the Present State of Natural Philosophy, and how its defects may be remedied by a methodical proceeding in the making experiments and collecting observations,” posthumously published in 1705.

bations of the soul but, given the current historical predicament, one of their chief causes. The idea that natural philosophy might play this role is consistent with the descriptions we find offered for the goals of natural philosophy in Cicero's *De finibus*. Here the Epicurean spokesman Torquatus makes this claim for natural philosophy: "knowledge of the facts of nature relieves us of the burden of superstition, frees us from fear of death, and shields us against the disturbing effects of ignorance which is often in itself a cause of terrifying apprehensions" (I.19.64). As we have already noted, for Cicero *superstitio* was characterized by excessive fear of the gods and this, broadly speaking, is relevant to Delumeau's claims about the increasing "culpabilisation" of the early modern West. Natural philosophy—albeit one that assumed an intimate relation between the individual and the *kosmos*—thus provides a means of achieving freedom from fear and superstition.

Bacon, too, will speak of necessary cures for superstition, and his repeated advocacy of charity as a religious virtue that admits no excess is highly significant in this context (OFB XV, p. 39; Le Doeuff 1991, p. 327).⁷ But his initial interest seems to be natural history and natural philosophy, and the possibility that they might be reformed by the culture of the mind. (Indeed, in a move that places Bacon at some distance from Torquatus, nature itself is to be reformed in the process as well.) One suggestion is that *Novum organum* offers this kind of programme. But it is in the *Advancement of Learning*, where it is presented as a component of moral philosophy, that Bacon begins the systematic development of the *cultura animi* theme.

Bacon and the *Cultura Animi*

Bacon's use of elements of the *cultura animi* tradition has already been noted by others, most interestingly in relation to how his treatment of this moral theme might be related to his natural philosophical programme (Corneanu 2011, Jalobeanu 2010). My aim in this section is to give a brief overview of Bacon's use of the tradition, and to draw out what I believe to be some of its distinctive features. Bacon's earliest references to the culti-

7. Later apologists for the Royal Society will take up the theme, explicitly identifying natural philosophy as the cure for perturbations of the mind and religious sectarianism. Thus Thomas Sprat: "The *Real Philosophy* will supply our thoughts with excellent *Medicines*, against their own *Extravagancies*, and will serve in some sort, for the same ends which the *Moral* professes to accomplish . . . it will certainly have a surer effect in the composing, and purifying of their thoughts, than all the rigid precepts of the Stoical, or the empty distinctions of the *Peripatetic Moralists*." (Sprat 1667, p. 341, cf. pp. 358f.). Also see Glanvill 1668, pp. 146–8; 1671, p. 46. For more extensive discussions see Corneanu 2011, ch. 3; Jalobeanu 2010; Harrison 2011.

vation of the mind come in his epistolary “Advice to the Earl of Rutland on his Travels,” probably written in the 1690s. Here Bacon commends to the appropriately named Roger Manners “that which in moral philosophy we call ‘cultum animi’, the tilling and manuring of you own mind.” Bacon goes on to offer what in many respects seems to be a standard Stoic advocacy of self control, emphasizing “unmovable constancy and a freedom from the passions, which are indeed sicknesses of the mind.” He hints that the Stoic goal of the extirpation of the passions was extreme, and notes the necessity for divine grace. But tellingly he also notes that philosophy, the handmaid of divinity, does not condemn “care and industry” in the business of self-mastery (Bacon [1596] 2002, pp. 69, 70).

Bacon takes up the idea of *cultura animi* again in the *Advancement of Learning*, in the context of a discussion of moral philosophy (rather than natural history or natural philosophy). The first explicit occurrence is a reference to the “Georgics of the mind”⁸:

And surely if the purpose be in good earnest not to write at leisure that which men may read at leisure, but really to instruct and suborn Action and active life, these Georgics of the mind concerning husbandry & tillage thereof, are no lesse worthy then the heroical descriptions of *virtue, duty & felicity* wherefore the maine & primitive division of Morall knowledge seemeth to be in the Exemplar or Platforme of Good, and the Regiment or Culture of the Mind; The one describing the nature of Good the other prescribing rules how to subdue, apply, and accommodate the will of man thereunto. (OFB IV, p. 135)

Bacon contends that the deficiency of the ancients’ moral philosophy lay in their over-emphasis on the first part of this task—i.e. descriptions of the good, rather than the means of attaining it (echoing Aristotle’s critique of Plato in *Nicomachean Ethics* II.2). In *De augmentis* he adds that Christian moral philosophy is superior in this respect. Thus while elements of pagan moral philosophy were to be greatly admired, “yet so as the pious and earnest diligence of divines, which has been employed in weighing and determining duties, moral virtues, cases of conscience, the bounds of sin, and the like, has left the philosophers far behind” (SEH IX, p. 195).⁹ In the *Advancement*, he goes on to say that the philosophers of an-

8. This is preceded in earlier sections, however, by references to the “diseases of the mind” and their “remedies” (OFB IV, pp. 12, 50, 87–88, 95). The idea that Virgil’s *Georgics* might have influenced Bacon’s programme is briefly explored in Low 1983. See also Patterson 1992, pp. 134–8 and De Bruyn 2004.

9. Interestingly, Bacon’s additions to *De augmentis* (an expanded Latin version of the *Advancement*) often stress what is distinctively Christian about his position. The “cases of con-

tiquity were far too sanguine in the estimation of our moral capacities, proposing a far “higher elevation of man’s nature” than matched the reality. Bacon here alludes to Seneca’s typically Stoic assertion that part of the greatness of man was to be attributed to the god-like element in the human soul. Finally, he points to a third difference, insofar as in the Christian understanding our present happiness lies in “the felicity which is by hope of the future world” (OFB IV p. 135; cf. La Primaudaye 1586, Author to the Reader). This is informed by Bacon’s conception of the present age as a *saeculum* bounded by the Fall and a future world.

A little further on, under the specific heading of *De Cultura Animi*, Bacon enumerates a number of stages in the “medicining of the mind” which include, crucially, knowledge of what he refers to as the “diseases and infirmities of the mind which are no other than the perturbations and distempers of the affections” (OFB IV p. 149). He thus rehearses the commonplace that self-knowledge is the beginning of the philosophical task, and his reference to “perturbations” draws directly on the Stoic idea that a primary target of philosophical therapy is the disturbances of the mind caused by opinion and false judgement. We find similar themes in the tradition of English moral psychology represented by Timothy Bright, Thomas Wright, and Thomas Rogers. However, unlike these authors, Bacon makes no reference in this context to the corruption of human nature by the Fall, nor to the idea that that primeval event was the primary source of the disorder of the passions.¹⁰ But if he makes no reference to sacred history here, Bacon nonetheless declares that this whole discussion of the cure of the mind is primarily the province of theology: “the cure of mens Minds belongeth to sacred Divinity,” to which moral philosophy is a humble handmaid (OFB IV p. 146).¹¹ Elsewhere he adds that there is a kind of culture of the mind that is “more accurate and elaborate than the rest” and which requires the promotion of good in the mind and the extirpation of evil. The former calls for “vowes or Constant resolutions, and observances or exercises which . . . keepe the mynd in continual obedience.” The latter requires “some kind of Redemption, or expiation of that which is past; and an Inception of account *de Novo* for the time to come.” And

science” may be a reference to puritan casuistry, in spite of Bacon’s reservations about casuistry. See Perkins 1604.

10. See e.g., Bright 1586, p. 119; Rogers 1576, Preface; Wright 1601, pp. 2–3. Cf. La Primaudaye 1586, pp. 13, 171; 1618, pp. 6, 12, 13, 20f., 589, 866, 889. See also Harrison, 2007.

11. This is a reworking of the medieval commonplace of philosophy as handmaiden to theology. Bacon invokes the same metaphor for natural philosophy which “is rightly given” to religion “as her most faithful servant” (OFB XI, p. 145).

this belongs to the sphere of the “sacred and religious” (OFB IV, p. 153).¹² In fact, Bacon’s references to future hopes and to an expiation of past transgressions signal his intention to locate the whole discussion within the context of sacred history, of a past Fall and a future eschatological hope—elements necessarily absent from the classical treatments.

In concluding his discussion of moral philosophy and *cultura animi*, Bacon identifies Christian charity as a key virtue. Heathen and profane treatments of the virtues have but “a shadowe of that divine state of mind which Religion and the holy faith doth conduct men unto; by imprinting upon their soules *Charity*” (OFB IV, p. 154). A mind inflamed with charity, he continues, conduces more to the perfection of the mind “than all the doctrine of morality can do.” In contrast to Lipsius, who identified constancy as the virtue to be sought, for Bacon it was charity that both exalts the mind and “doth settle and compose it” (OFB IV, p. 155). In this, he also sides with Augustine against the classical elevation of wisdom as the goal of intellectual and moral endeavours (Augustine *De doctrina Cristiana*, II.xlii.63; I.xxxv.39; II.vii.10 [PL 34, pp. 65, 34, 39]).

In sum, the medicine of the mind is offered here as the practical component of a moral philosophical project that for Bacon is cautiously placed within an overarching theological context—much more so than in his earlier recommendations to Roger Manners. As we would expect, it focuses on the practicalities of the moral life and, as is also characteristic of Bacon’s *oeuvre*, identifies a number of topics to be more fully explored. It has been plausibly argued that the desiderata of the *Advancement* are subsequently taken up in the work for which Bacon was best known in his own age—the *Essayes* (Crane 1972). Thus, for example, the desire for discussions of the passions is met by the essays “Of Envy,” “Of Love,” “Of Superstition,” “Of Vain-Glory,” “Of Anger,” and so on. Bacon also devotes an essay to “Goodness and Goodness of Nature,” where he again identifies the theological virtue charity as the greatest “of the all the virtues and dignities of the mind,” “the affecting of the Weale of Men, which is that the Grecians call *Philanthropia*” (OFB XV, p. 38).

All of this is somewhat consistent with existing understandings of *cultura animi* which restrict its application to moral cultivation of the individual and the production of good citizens. The question remains whether this *cultura animi* project might also be related to natural philosophy, and if so how. My suggestion is that Bacon’s application of this tradition to natural philosophy—an intention incipient in the *Advancement of Learning*

12. Bacon may have in mind Basil’s suggestion that repentance is the medicine of the soul. Basil the Great 1950, p. 436. Cf. Cyril of Alexandria 1983, p. 592.

and conspicuous in the *Novum Organum*—is made possible by three, related innovations. First is Bacon’s reworking of the virtue of charity, which, as we have seen, he already extends to human welfare generally, and for which advances in learning are proposed as a means. The virtue of charity thus provides a link between moral and natural philosophy. Second, Bacon embeds his proposed cure for the mind in a distinctive understanding of sacred history. This history extends back to the primeval past that takes in the Fall of man, the onset of the diseases of the mind and the loss of knowledge that ensued; it takes in an immediate present, understood as a time ordained by providence for a reform of learning and a beginning of the restoration of the losses of the Fall; and it looks forward to a future in which elements of our fully redeemed condition are anticipated here on earth. These historical contexts are informed by Bacon’s reading of the Genesis narratives of creation and fall, his interpretation of the biblical imperatives to “have dominion,” and his understanding of the original vocation of Adam as a cultivator of the earth. Third, and related to these points, Bacon combines a Protestant notion of vocation and the sanctity of mundane professions with a renaissance elevation of the *vita activa* and the philosopher’s civic responsibility, and with these in mind seeks to invest natural philosophy with a new status and significance.

Cultura Animi and Sacred History

One way of linking the moral project of the *cultura animi* with natural philosophy would be to consider whether “the diseases and infirmities of the mind” had intellectual as well as moral consequences, in which case their remediation would be integral to the natural philosophical project. It can be argued that this is what Bacon attempts in *Novum organum*. The title of the work itself offers a major clue. Logic—the subject matter of Aristotle’s “old” *Organon*—was often considered to be the most appropriate cure for the ills of the mind. Bacon himself observes that the received body of logic is a “medicine” that “just cannot cope with the disease, and it is not even free of the disease itself” (OFB XI, p. 19). But more directly, Bacon takes up the medical metaphor in the *Novum organum* along with a number of the features of the programme outlined in the *cultura animi* section of the *Advancement*. In three key successive aphorisms of Book 1 of the *Novum organum*, Bacon speaks of the difficulties encountered in “discovering and cultivating sciences”:

the difficulty arose not from things themselves, over which we have no control, but from the human intellect and its use and application, which is something being capable of treatment and cure. It would be best then to expose these errors. (OFB XI, p. 153)

In the two preceding aphorisms Bacon provides the context, within sacred history, for his proposed instauration of learning. Thus in §92 he identifies as obstacles to the progress of science these things: “nature’s obscurity, life’s shortness, the senses’ deceits, our fallibility of judgement, the intractability of experiments and the like” (OFB XI, p. 149).¹³ These impediments, as it turns out, were traditionally regarded as having been consequences of the Fall of man (Harrison 2007, pp. 155–72). In the aphorism that follows (§93), Bacon makes his celebrated reference to the prophecy of Daniel:

we must not forget the prophecy of *Daniel* concerning the last ages of the world: that *Many shall go to and fro and knowledge shall be increased*, which manifestly hints and signify that it was fated (i.e. Providence so arranged it), that thorough exploration of the world (which so many long voyages have apparently achieved or are presently achieving) and the growth of the sciences would meet in the same age. (OFB XI, p. 151)

The historical context in which Bacon here locates the *cultura animi* has both backward and forward looking elements. This motif of a divinely-ordained augmentation of learning appears in the frontispiece of the 1620 edition of the *Great Instauration*, which bears the same epigraph: “*Multi pertransibunt et augebitur scientia.*”¹⁴ Bacon had earlier made a similar reference in *Valerius Terminus* and *Advancement of Learning* to this prophecy of Daniel and to the prospects for “further discovery of knowledge” in his own time (SEH III, p. 221; OFB IV, p. 71). These prophetic references to a reform of learning were reinforced by Bacon’s providentialist reading of the sixteenth-century reforms of religion, first noted in the *Advancement*, where Bacon refers to the fact that Providence has ordained that the reformation of religious abuses would be accompanied by “a renovation and new spring of all other knowledges.” He adds that these extend even to Catholic territories: “we see the Jesuits, who partly in themselves, and partly by the emulation and provocation of their example, have much quickened and strengthened the state of Learning” (OFB IV, p. 37).

Bacon closes *Novum organum* with a summary of the sacred historical context, and the imperatives which, in his view, that history calls for:

13. As Guido Giglioni has pointed out to me, this statement also echoes Hippocrates’ first aphorism: “Life is short, the Art long, opportunity fleeting, experiment treacherous, judgment difficult” (Hippocrates 1943, p. 99).

14. Dan. 12:4. In fact the Vulgate reads “*plurimi pertransibunt et multiplex erit scientia*”, which Bacon accurately cites in *Advancement*. Whether the change of wording was deliberate is not clear. See Farrington 1967, p. 132. On the use of this passage in Puritan sermons, see Webster 1975, pp. 9–12.

For by his fall man lost both his state of innocence and his command over created things. However, both of these losses can to some extent be made good even in this life, the former by religion and faith, the latter by the arts and sciences. For the curse did not quite put creation into a state of unremitting rebellion, but by virtue of that injunction *In the sweat of thy face thou eat thy bread*, it is now by various labours (nor for such disputations and the idle ceremonies of magic) at length and to some degree mitigated to allow man his bread or, in other words, for the use of human life. (OFB XI, p. 447)

The business of redemption was to be understood not simply in traditional soteriological terms, according to which religion provides a cure for the soul, but is extended to incorporate the material and the mundane. A specific case that exemplifies this general approach is Bacon's interest in the prolongation of life. In the *Historia vitae & mortis* he writes that: "although we Christians aspire and thirst after the promised land, yet in the meantime it will be a mark of Divine Favour if, in our Pilgrimage in this world's wastes, these our shoe and clothes (our frail bodies, that is), be as little worn out as possible" (OFB XIII, p. 143). Bacon believes that mortality, a consequence of the Fall, can thus be partially ameliorated even in the present state. More broadly, Bacon offers a novel concept of progress and, equally importantly, a setting out of the conditions that would make such progress imaginable. Part of the purpose of *Advancement of Learning* and *Novum organum* is to offer religious legitimacy for this idea of progress (Harrison 2012; Le Doeuff 1991, p. xx). The model on offer is breathtakingly ambitious, grounded in a particular understanding of the course of history, but with a strong this-worldly orientation.

Part of what drives this programme is a new reading of the Genesis narratives of Creation and Fall, along with a reworking of the motifs of dominion and cultivation found there. In essence, this amounted to an insistence that the exercise of a psychological self-dominion be projected outwards onto the world. It is striking that the exegetical tradition from the Fathers onwards had tended to psychologize the "have dominion" imperatives of Genesis, suggesting that after the Fall the kind of dominion of which the human race stood most in need was the imposition of control over fractious passions (Harrison 1998b, 1999). Adam's dominion over the beasts represented the dominion of reason over the passions. Following the Fall, the passions rebelled against reason, much as the wild beasts had rebelled against Adam. According to this exegetical tradition, the re-establishment of dominion over the beasts was understood to be a process

of moral formation: the establishment of an inner dominion through the practice of spiritual exercises.

Without wishing to over-generalise, we can say that Protestant exegetes reject both the hermeneutical tradition of allegorizing and the way in which the Genesis narratives had been used to underpin the “monkish” virtues associated with the contemplative life (Harrison 1998a, pp. 205–65). Luther and Calvin both noted that Adam had been placed in the Garden of Eden to work, and they insisted that created things were there to be used (Luther 1958, p. 103; Calvin 2003a, p. 125). Luther stated that the religious life involves “using” the world and insisted that the true Christian must “have dealings and hold intercourse with his fellows, to join them in all temporal affairs” (Luther 2000, p. 281). Calvin, too, famously advocated employing one’s abilities in the service of the common good:

Those who employ usefully whatever God has committed to them are said to be engaged in *trading*. The life of the godly, is justly compared to *trading*, for they ought naturally to exchange and barter with each other, in order to maintain intercourse; and the industry with which every man discharges the office assigned him, the calling itself, the power of acting properly, and other gifts, are reckoned to be so many kinds of *merchandise*; because the use or object which they have in view is, to promote mutual intercourse among men. Now the *gain* which Christ mentions is general usefulness, which illustrates the glory of God. (Calvin 2003b, p. 443)

This passage offers a brief account of Calvin’s “utilitarianism,” and his insistence that one’s labour is to be directed towards “utility,” “profit,” and “advantage.” These, in turn, promote the good of society and the glory of God.¹⁵ Moreover, this participation in society is charged as a specific duty that can help partially restore an original prelapsarian order (Calvin 2003c, pp. 350f.). This understanding of the sanctity of mundane work and its justification in terms of a particular reading of Genesis were to become prominent features of Bacon’s justification for a natural philosophy that was similarly directed towards a partial restoration of a prelapsarian state of affairs. It is significant that Augustine, Luther, and Calvin all speak of “using” the world. But for Augustine this use consists in contemplative practice by means of which we ascend from the visible elements of the creation to the invisible (Augustine, *De doctrina Christiana* 1. 2, 2). The “use” of the world in this sense is an integral part of the contempla-

15. On this notion and its influence in Early Modern England see Little 1970, esp. pp. 57–62. Cf. Weber [1904–5] 2001, p. 265, n. 33; Harbison 1964, pp. 249–70.

tive life, and is wholly consistent with the Patristic spiritual readings of “cultivation” and “dominion.” Luther and Calvin both suggest a more material use of the world, sanctioned they believe, by a literal reading of Genesis. It is precisely this reading that Bacon adopts, but with this added element: it is a new natural philosophy (rather than a platonically-inspired *allegoresis*) that will unlock the true significance of the created world. This is why Bacon insists that we can find God’s power in nature, but not his image. Accordingly, our “use” of nature must be more a matter of action than contemplation: “as if,” he writes, “there were to be sought in knowledge a couch, whereupon to rest a searching and restless spirit; or terrace, for a wandering a variable mind to walk up and down with a fair prospect.” Rather than adopt this quiescent contemplative approach, we must scrutinise nature to uncover “a rich Store-house, for the glorie of the Creator, and the reliefe of Mans estate” (OFB IV, p. 32). In so doing, we reverse the curse placed on human endeavours at the Fall. Knowledge is to be sought, not for “the quiet of resolution” but for “a restitution and re-investing (in great part) of man to the sovereignty and power . . . which he had in his first state of creation” (SEH III, p. 222).

In seventeenth century England we encounter many similar references to the need for knowledge to bear fruit. Thomas Jackson declared that “all knowledge must be measured by the use or end.” He illustrates this with the cultivation metaphor. Observing that the husbandman needs “experimental skill,” he rehearses the Augustinian motif of God as the cultivator: “our Sauour tels vs his father is an husbandman, and is best glorified by such fruites as we shall bring forth vnto saluation, (the true end of Christian knowledge)” (Jackson 1615, pp. 85, 86). Edward Waterhouse also stressed this link between the cultivation of the mind, and cultivation of the earth:

But when the World grew old in sin, as in age, he left them to labour out their way to life and light, and to see the toyl sin had exposed them to; while, as nothing naturally grew in the Earth, but weeds, bryars and thorns, without cultivation, so in the mind nothing of true coelestial and virtuous tendency could be or abide, without the polishment of art, and the labour of searching after it. (1653, p. 5)¹⁶

In a similar vein, Puritan writer John Flavel wrote in *Husbandry Spiritualized* that: “By a skilful and industrious improvement of the creatures . . . we might have a fuller taste of heaven” (Flavell 1674, Sig. A2v).

Common though these general ideas might have been, Bacon’s “geor-

16. See also Hammond 1684, vol. 4, p. 619; Blount 1692, p. 76; Denny 1653, p. 43.

gics” involve a quite explicit application of the motif of cultivation to natural philosophy. This seems original. However, this is not a natural philosophy divorced from the realm of the virtues—the original context for the *cultura animi*—for the virtues themselves are understood as embodied in an active life, not in the political sphere but in the pursuit of new kind of natural philosophy. The success of this redeployment ultimately rests upon Bacon’s marshalling of exegetical resources to interpret the Genesis narratives as sanctioning a new engagement with nature, along with his insistence that the fruits of natural philosophy are to be identified with the fruits of the cardinal Christian virtue, charity (Vickers 1984; Watanabe 1992; Harrison 2001). These two features of the programme distinguish Bacon’s use of the idea of *cultura animi* from that of his Stoic and Neostoic sources, and it is in this sense that his culture of the mind is Augustinian. Of course, it could be reasonably objected that much of Bacon’s thought is redolent of Pelagianism. But if the contrast in approaches to the culture of the soul is understood in terms of the two opposed conceptions with which this paper began, Bacon’s sympathies lie more with the North African Church Father than with Cicero.

Conclusion

All of this suggests a number of further questions for investigation. I have proposed particular lines of influence on Bacon’s thought which seem plausible. Yet the business of identifying proximate sources remains incomplete. It would be helpful to know in detail about Bacon’s patristic sources, about his access to biblical commentary, and his familiarity with works of the Protestant reformers. Moving beyond the influence of the scriptural tradition, it is also important to gauge the relative weight of biblical narratives against the classical sources which are also ubiquitous in Bacon’s works. The ideal of labor as represented in Virgil’s *Georgics*, along with his presentation of competing conceptions of the happy man, and Hesiod’s “Fall,” with its message that necessity is the mother of invention, offer examples of other possible influences for Bacon’s reshaping of natural philosophy. Consideration might also be given to broader questions of interpretation, such as adjudicating between Le Doeuff and Farrington on whether Bacon promotes a natural philosophy on the model of gardening and agriculture (Le Doeuff 1990) or presages an “industrial science” (Farrington 1973). Certainly, on the basis of the present analysis, the former seems more likely. A further question concerns Bacon’s conception of history, and the manner in which it differs from both Stoic fate and Calvinist theological determinism.¹⁷ It is also still somewhat unclear

17. Bacon seems to change from a (Calvinist) Prelapsarian (God preordained the Fall) to

whether the culture of the mind is that which makes possible a reformed natural philosophy, or whether it is the practices of experimental natural philosophy, on the analogy of spiritual exercises, that constitute the culture of the mind. My suggestion would be that for Bacon it is the former, although we encounter instances of the latter in justifications of experimental natural philosophy that emanate from the apologists for the Royal Society in the 1660s and 1670s. But the idea of experimental natural philosophy as a regimen of self-discipline seems worth pursuing further.

Finally, and less tentatively, these considerations reinforce the claims made by Corneanu (2011) and Jalobeanu (2010) in other contexts to the effect that the *cultura animi* tradition plays an important role in Bacon's conception of the role of natural philosophy. I also hope to have shown that this role is generally consistent with the pattern of the emergence of early modern natural philosophy that I have set out elsewhere (Harrison 2007).

References

- Augustine of Hippo, 1997–2000. *Works of St Augustine*. 20 vols. Edited by John E. Rotelle. New York: New City Press.
- Bacon, Francis. (1596) 2002. "Advice to the Earl of Rutland." In *The Major Works*. Edited by Brian Vickers, Oxford. Oxford University Press.
- Basil the Great. 1950. *The Writings of Saint Basil*, vol. 1. New York: Fathers of the Church.
- Blount, Thomas. 1692. *Essays on several subjects*. London: Richard Bently.
- Bonaventure. 2007. *Commentary on the Gospel of John*. Edited by R. J. Karris. Saint Bonaventure, NY: Franciscan Institute.
- Bouwsma, William J. 1975. "The Two Faces of Humanism: Augustinianism and Stoicism in Renaissance Thought." Pp. 3–60 in *Itinerarium Italicum*. Edited by Heiko Oberman and T. Brady. Leiden: Brill.
- Bright, Timothie. 1586. *A Treatise of Melancholy*, London: John Windet.
- Calvin, John. 2003a. *Commentary on Genesis*. Translated by John King. Grand Rapids: Baker Books.
- Calvin, John. 2003b. *Commentary on a Harmony of the Evangelists*, vol. 2. Translated by William Pringle. Grand Rapids: Baker Books.
- Calvin, John. 2003c. *Commentaries on Galatians and Ephesians*. Translated by William Pringle. Grand Rapids: Baker Books.
- Chew, Audrey. 1988. *Stoicism in Renaissance English Literature*. New York: Peter Lang.

an Infralapsarian (God foreknew but did not preordain the Fall) between the writing of his *Meditationes Sacrae* and his *Confession*. See Matthews 2008, p. 47; Langman 2010.

- Colish, Marcia L. 1985. *The Stoic Tradition from Antiquity to the Early Middle Ages, vol. 2: Stoicism in Christian Latin Thought through the Sixth Century*. Leiden: Brill.
- Corneanu, Sorana. 2011. *Regimens of the Mind: Boyle, Locke, and the Early Modern Cultural Animi Tradition*. Chicago: University of Chicago Press.
- Crane, Ronald S. 1972. "The Relation of Francis Bacon's *Essays* to his Programme for the Advancement of Learning." Pp. 272–292 in *Essential Articles for the Study of Francis Bacon*. Edited by Brian Vickers. London: Sidgwick and Jackson.
- Cyril of Alexandria. 1983. *Commentary on Luke*. Translated by R. Payne Smith. Long Island: Studion.
- De Bruyn, Frans. 2004. "Reading Virgil's "Georgics" as a Scientific Text: The Eighteenth-Century Debate between Jethro Tull and Stephen Switzer." *English Literary History* 71: 661–689.
- Delumeau, Jean. 1983. *Le Péché et la peur: La culpabilisation en Occident, XIIIe–XVIIIe siècles* Paris: Fayard.
- Delumeau, Jean. 1977. *Catholicism between Luther and Voltaire*. Philadelphia: Westminster John Knox.
- Denny, William. 1653. *Pelecanicidium, or, The Christian adviser against self-murder*. London: Thomas Huckescott.
- Farrington, Benjamin. 1973. *Francis Bacon, Philosopher of Industrial Science*. London: Macmillan.
- Fitzgerald, J. T., ed. 2008. *Passions and Moral Progress in Greco-Roman Thought*. London: Routledge.
- Flavel, John. 1674. *Husbandry Spiritualized*. London: Robert Boulter.
- Gaukroger, Stephen, ed. 1998. *The Soft Underbelly of Reason*. London: Routledge.
- Glanvill, Joseph. 1668. *Plus Ultra*. London: James Collins.
- Glanvill, Joseph. 1671. *Philosophia Pia*. London: James Collins.
- Gorski, Philip S. 2003. *The Disciplinary Revolution: Calvinism and the Rise of the State in Early Modern Europe*. Chicago: University of Chicago Press.
- Hammond, Henry. 1684. *The works of the reverend and learned Henry Hammond, D.D.* vol. 4. London: R. Royston and R. Davis.
- Hankins, James. 1990. *Plato in the Italian Renaissance*, 2 vols., Leiden: Brill.
- Harbison, E. Harris. 1964. *Christianity and History*. Princeton: Princeton University Press.
- Harrison, Peter. 1998a. *The Bible, Protestantism and the Rise of Modern Science*. Cambridge: Cambridge University Press.
- Harrison, Peter. 1998b. "Reading the Passions: The Fall, the Passions, and Dominion over Nature." Pp. 49–78 in Gaukroger 1998.
- Harrison, Peter. 1999. "Subduing the Earth: Genesis 1, Early Modern Sci-

- ence, and the Exploitation of Nature" *The Journal of Religion* 79: 86–109
- Harrison, Peter. 2001. "Curiosity, Forbidden Knowledge, and the Reformation of Natural Philosophy in Early-Modern England." *Isis* 92: 265–90.
- Harrison, Peter. 2007. *The Fall of Man and the Foundations of Science*. Cambridge: Cambridge University Press.
- Harrison, Peter. 2011. "Experimental Religion and the Experimental Science in Early Modern England." *Intellectual History Review* 21:413–433.
- Hippocrates. 1945. *Hippocrates*, vol. 4. Translated by W. H. S. Jones. Loeb Classical Library, Cambridge Mass., Harvard University Press.
- Hooke, Robert. 1705. "A General Scheme, or Idea of the Present State of Natural Philosophy, and how its defects may be remedied by a methodical proceeding in the making experiments and collecting observations." In *The Posthumous Works of Robert Hooke*. Edited by R. Waller. London: Sam Smith and Benj. Walford.
- Jackson, Thomas. 1615. *Justifying Faith. Or the Faith by which the Just Do Live*. London: John Beale.
- Jalobeanu, Dana. 2008. "Bacon's Brotherhood and its Classical Sources." Pp. 197–230 in *Philosophies of Technology: Francis Bacon and his Contemporaries*. Edited by Claus Zittel et al. Leiden: Brill.
- Jalobeanu, Dana. 2010 "Experimental Philosophers and Doctors of the Mind: the appropriation of a philosophical tradition." Pp. 37–63 in *Naturel et surnaturel. Philosophies de la nature et métaphysique aux XVI–XVII siècles*. Edited by Vlad Alexandrescu, Robert Theis. Hildesheim: Georg Olms Verlag.
- Kolbet, Paul R. 2010. *Augustine and the Cure of Souls: Revising a Classical Ideal*. Notre Dame: University of Notre Dame Press.
- Langman, A. P. "The Future Now: Chance, Time and Divination in the Thought of Francis Bacon." Pp. 142–158 in *The Uses of the Future in Early Modern Europe*. Edited by Andrea Brady and Emily Butterworth. London: Routledge.
- La Primaudaye, Pierre de. 1586. *The French academie wherein is discoursed the institution of maners, and whatsoever els concerneth the good and happie life*. London : G. Bishop and Ralph Newbery.
- La Primaudaye, Pierre de. 1618. *The French academie Fully discoursed and finished in foure bookes*. London: Thomas Adams.
- Le Doeuff, Michèle. ed. and tr. 1991. *Du progrès et de la promotion des saviors*. Paris: Gallimard.
- Lipsius, Justus. 1584. *De Constantia*. Antwerp: Plantijn.
- Little, David. 1970. *Religion, Order, and Law: A Study in Pre-Revolutionary England*. Oxford: Blackwell.

- Low, Anthony. 1983. "New Science and the Georgic Revolution in Seventeenth-Century English Literature." *English Literary Renaissance* 13: 231–59.
- Luther, Martin. 1958. *Lectures on Genesis in Luther's Works*, vol. 1. Edited by Jaroslav Pelikan. St Louis: Concordia.
- Luther, Martin. 2000. *Complete Sermons of Martin Luther*, vol. 4. Grand Rapids: Baker Books.
- Markus, Gyorgy. 1993. "Culture: The making and make-up of a concept (an essay in historical semantics)." *Dialectical Anthropology* 18: 3–29.
- Matthews, Steven. 2008. *Theology and Science in the Thought of Francis Bacon*. Aldershot: Ashgate.
- McCrea, Adriana. 1997. *Constant Minds: Political Virtue and the Lipsian Paradigm in England, 1584–1650*. Toronto: University of Toronto Press.
- Migne, J.-P. (ed.). 1844–1905. *Patrologia Latina*. 217 vols. [PL]
- Nederman, Cary J. 1988. "Nature, Sin, and the Origins of Society: The Circeronian Tradition in Medieval Political Thought." *Journal of the History of Ideas* 49: 3–26.
- Niedermann, J. 1941. *Kultur: Werden und Wandlungen des Begriffs und seiner Ersatzbegriffe von Cicero bis Herder*. Florence: Bibliopolis.
- Nussbaum, Martha C. 1986. "Therapeutic Arguments: Epicurus and Aristotle." Pp. 31–74 in *The Norms of Nature*. Edited by M. Scholfield and G. Striker. Cambridge: Cambridge University Press.
- Nussbaum, Martha C. 1994. *Therapy of Desire: Theory and Practice in Hellenistic Ethics*. Princeton: Princeton University Press.
- Oestereich, Gerhard. 1982. *Neostoicism and the Early Modern State*. Cambridge: Cambridge University Press.
- Otten, Charlotte. 1985. *Environ'd with Eternity: God, Poems, and Plants in Sixteenth and Seventeenth Century England*. Lawrence: Coronado Press.
- Patterson, Annabelle M. 1992. *Pastoral and Ideology: Virgil to Valéry*. Berkeley: University of California Press.
- Perkins, William. 1604. *The First Part of the Cases of Conscience*. Cambridge: John Legat.
- Rogers, Thomas. 1576. *A Philosophicall Discourse, Entitled, The Anatomie of the Minde*. London: A. Maunsell.
- Sorabji, R. 2002. *Emotion and Peace of Mind: From Stoic Agitation to Christian Temptation*. Oxford: Oxford University Press.
- Sprat, Thomas. 1667. *History of the Royal Society*. London: F. Marytn & F. Allefry.
- Taylor, Charles. 2007. *A Secular Age*. Cambridge, Mass.: Harvard University Press.

- Todd, M. 1983. "Seneca and the Protestant Mind: the Influence of Stoicism on Puritan Ethics." *Archiv für Reformationsgeschichte* 74: 182–9.
- Waterhouse, Edward. 1653. *An Humble Apologie for Learning and Learned Men*. London: T. Collins.
- Weber, Max. [1904–5] 2001. *The Protestant Ethic and the Spirit of Capitalism*. Translated by Talcott Parsons. London: Routledge.
- Webster, Charles. 1975. *The Great Instauration: Science, Medicine and Reform, 1626–1660*. London. Duckworth.
- Williams, Raymond. 1976. "Culture." Pp. 87–93 in *Keywords: A vocabulary of culture and society*. London: Fontana.
- Wright, Thomas. 1601. *The Passions of the Minde*. London: V. Simmes for W. Burre.