The Natural Philosopher and the Virtues

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Introduction

One of the distinctive features of modern science—indeed some would say its defining characteristic—is its reliance on a set of clearly defined methodological prescriptions, known popularly as ‘the scientific method’. The much-vaunted objectivity of science is vested in the observance of this universal method and, despite the reservations of critics, modern science draws much of its social legitimacy from the perceived reliability of its methods. Central to the prestige of scientific methods is their insensitivity to the personal qualities of those who employ them. The putative universality and objectivity of science are attributed to the fact that the production of dependable knowledge does not rely on its practitioners sharing a common set of personal characteristics, but rather on their observance of common set of procedures. In this respect modern science differs radically from its medieval and early modern predecessor, natural philosophy. Engaged as they were in a branch of philosophy, natural philosophers were expected to conform to traditional models of the philosophical persona, in which the moral characteristics of the individual were the pledge of the truth of what they knew. That said, the beginnings of a shift of focus from persons to methods was already in train in the seventeenth century. In this paper I shall suggest that this development owed much to Reformation criticisms of the traditional ideal of the contemplative life and of Aristotelian notions of virtue. On the Protestant view, because human beings were constitutionally incapable of the kinds of moral transformations required on the classical and scholastic models, reliable knowledge had to be grounded in other ways.
Francis Bacon’s influential new conception of the persona of the natural philosopher drew on these insights, specifying procedures for the acquisition of knowledge that in principle could be adopted by anyone, irrespective of their moral status. As modern science began its long development from natural philosophy, observance of an objectifiable ‘method’ came to replace the interior cultivation of virtue.

1. Virtues, the Contemplative Life, and the Philosophical Quest

The early modern period inherited from antiquity a conception of philosophy as the contemplation of truth. In the Republic, Plato contrasts the self-sufficient philosophical life oriented towards ‘divine contemplations’ with that devoted to ‘the petty miseries of men’. For Plato, ‘the lover of wisdom’, on account of an association with the divine order, ‘will himself become orderly and divine’. Aristotle agreed that contemplation is the activity of God and that the contemplative life was possible ‘in so far as something divine is present in [man]’. Almost as an afterthought in Book X of the Nicomachean Ethics, he also points out that contemplation of truth is the single activity that is pursued for its own sake and hence the sole endeavour in which true happiness is to be found. Public duties—political or military—are ultimately devoted to this end. Thus, while the tasks of statesman and soldier are attended with nobility, to ‘the philosopher’ alone is accorded ‘self-sufficiency, leisureliness, unweariedness … and all the other attributes ascribed to the supremely happy man’.

While the earliest Christian writers tended to be ambivalent about the merits of Greek philosophy, they nonetheless embraced the classical conception of the merits of the contemplative life. The distinction between action and contemplation was introduced into the Judeo-Christian tradition by Philo (c. 20 BC—c. AD 50), and was subsequently adopted by the fellow Alexandrian, Origen (c. 185—c. 254). It was Augustine (354—430), however,

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4 Aristotle, NE 1177b, Works, II, 1860; Cf. Politics 1333a-b; Plato, Republic 357b.
who provided the most influential early treatment of the distinction, linking *scientia* with the active life and *sapientia* with the contemplative. This identification would suggest the superiority of the contemplative life, and it is significant that for Augustine contemplation ‘lays peculiar claim to the office of investigating the nature of the truth’. Elsewhere, however, when discussing the allegorical representation of the two modes of life in the gospel figures of Mary and Martha, Augustine invests the distinction with an eschatological dimension: ‘in these two women two kinds of life are represented: present life and future life, toilsome and restful, miserable and beatific, temporal and eternal life.’ This would imply that pursuit of the active life is entirely appropriate in the present world. Overall, Augustine seems to suggest the desirability of achieving a balance between action and contemplation, insisting, for example, that ‘No man has a right to lead such a life of contemplation as to forget in his own ease the service due to his neighbour.’ Such a reading is consistent with Augustine’s distinction between ‘use’ (*uti*) and ‘enjoyment’ (*frui*)—‘we enjoy that thing which we love for its own sake … while everything else is simply to be used.’ Citizens of the ‘heavenly city’ thus use things and enjoy God; citizens of the ‘earthly city’ seek to use God and enjoy things. For Augustine, the appropriate response to the disordering of human desires that had resulted from the Fall is not to ignore the lower things in the creation, but to use them.

Almost two centuries later, Gregory the Great (c. 540—604), an enthusiastic advocate of monasticism, eschewed Augustine’s even-handedness and argued for the superiority of the contemplative life. The trajectory of the distinction from Gregory to Aquinas saw the

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9 Augustine adds: ‘nor has any man a right to be so immersed in active life as to neglect the contemplation of God.’ *City of God* XIX.19 (p. 698).
12 Gregory, *Moralia* 6, 61. For a comparison of Augustine and Gregory see D. C. Butler, *Western Mysticism: The Teaching of Augustine, Gregory and Bernard on Contemplation and the Contemplative Life*, 2nd edn. (New York: Harper & Row, 1966). Cf. Mason, *Active Life and Contemplative Life*, pp. 64-71. Gregory’s teaching was influential throughout the middle ages. Thus Walter Hilton, in his classic *Scale of Perfection* (1494): Thou must understand that there are in the holy Church two manner of lives (as saith St Gregory) in which a Christian is to be saved. The one is called *Active*, the other *Contemplative*; without living one of these two lives no man may be saved.’ I, ii.
gradual accommodation of the classical notion of the contemplative philosophical life to the monastic ideal. Thomas Aquinas (c. 1225—74) devoted four questions of the Summa theologiae to the issue before concluding that the contemplative life is the superior to the active. While making reference to the patristic writers, he essentially relies on the Aristotelian argument that contemplation tends to the perfection of the intellect, which is the most excellent part of the soul. More important than this measured endorsement of the contemplative life, however, was Thomas’s openness to other important aspects of the classical ideal of the philosopher. It is highly significant that Aquinas opens his Summa contra gentiles with an extended discussion of ‘the office of the wise man’. In this major apologetic work Aquinas argued that while pagan authors had rightly discerned the true end of the philosophical life, that goal was attainable only within the Christian religion. Christianity, in short, was the realization of the unfulfilled goals of pagan philosophy. This appropriation of the central features of the classical philosophical quest is further reflected in the way in which Aquinas takes up Aristotle’s organization of the sciences. Aquinas preserves Aristotle’s classification of the sciences as speculative, practical, and productive, and the further division of the speculative sciences into natural philosophy, mathematics, and the ‘divine science’ or metaphysics. The last of these, however, was now identified with Christian theology and thus came to assume the status that Aristotle had accorded metaphysics as the most excellent science of all. Thus not only does Christianity provide answers to the questions posed by pagan philosophy, but its theology satisfies the criteria of the highest science according to the standards of the classical tradition itself. On Aquinas’s analysis, while the pagan philosophers had sought wisdom, they had succeeded only in gaining a modicum of earthly wisdom. Heavenly wisdom could be attained only by those familiar with a divine science informed by revelation. Natural philosophy, however,

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13 Aquinas, Summa theologiae, Blackfriars edn. (London, 1964-76) [ST], 2a2ae. 179-82.
14 Aquinas, ST 2a2ae. 182, 2.
16 Aristotle, Topics, 157a6-157a13; Metaphysics 1025b-1026a. Cf. Plato, Republic, 509-511. Aristotle’s division of the sciences was widely adopted in the Middle Ages. See, e.g., Boethius, De Trinitate 2; Aquinas, Expositio supra librum Boethii De Trinitate [tr. The Division and Methods of the Sciences (Toronto, 1986)], Q.5 A.1; Robert Kilwardby, De ortu scientiarum, ch. 5.
18 Aquinas, ST 2a2ae. 9, 2; ST 1a. 1, 6.
contributes to this goal, inasmuch as it is a treatment of ‘lower causes’ that should inevitably lead to a consideration of the first cause. Pagan metaphysics also makes a contribution because it identifies a first cause, even though it fails to provide it with sufficient content. For these reasons, human philosophy is the ‘hand-maiden’ to divine philosophy (i.e., theology).

The pursuit of philosophical wisdom was not simply to do with the accumulation of knowledge of the particular subject matter of the various sciences. Rather more importantly it entailed becoming a particular kind of person. The attainment of wisdom, as Aquinas noted at the very beginning of the Summa contra gentiles, relates to a specific office, where ‘office’ is related to the possession of certain virtues. Aquinas explains, again on the authority of Aristotle, that to discharge one’s office is simply to act virtuously. Moreover, for Aquinas, the process of knowing calls for the mind of the knower to become conformed to that which is known. Knowledge of the truth, ultimately identified with contemplation of God himself, thus entails growing into conformity with the divine nature. ‘The rational creature’, as Aquinas puts it, ‘is made deiform’. As one progresses in knowledge of the first cause, of necessity one acquires ‘a certain rectitude.’ Again, this is consistent with Plato’s assertion that the lover of wisdom will become ‘orderly and divine’. Most important of all, Aquinas considers science (scientia) to be one of the intellectual virtues. In the Thomist understanding of the virtues, the traditional cardinal virtues (Prudence, Justice, Temperance, Fortitude) are supplemented by the theological virtues (Faith, Hope, and Love) and the intellectual virtues (Wisdom, science, and understanding). Understanding is the habit concerned with the grasp of self-evident principles; science is concerned with truths derived from those principles; wisdom with the highest causes, including the first cause—God. If we consider the intellectual virtues, it can be seen that both science and

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19 ‘For wisdom is twofold: mundane wisdom called philosophy, which considers the lower causes, causes namely that are themselves caused, and bases its judgements on them: and divine wisdom or theology, which considers the higher, that is the divine, causes and judges according to them.’ Aquinas, On the Power of God, Bk. 1 Q. 1 A 4, Body (London, 1932), p. 24.
20 ‘To say that a man discharges his proper office is equivalent to saying that he acts virtuously’. Aquinas, Summa Theologiae, I,172. tr. C. Vollert (St Louis, 1948), pp. 186f. The passage from Aristotle cited in support of this definition is NE 1106a15.
21 Aquinas, ST 1a. 12. 5. ‘More specifically, ‘when any created intellect sees the essence of God, the essence of God itself becomes the intelligible form of the intellect.’ Ibid.
22 Aquinas, ST, 1a2ae. 113, 1.
23 Aquinas, ST 1a2ae. 60, 5; 1a.2ae. 57, 2. Aristotle distinguished intellectual from moral virtues, and classified prudence (phronesis) as an intellectual virtue. NE 1103a, 1143b.
24 Aquinas, ST 1a2ae. 57, 2; Commentary on the Nicomachean Ethics, Book VI, Lectures III, V-VI Aristotle, NE 1139.
wisdom refer not merely to knowledge of sets of propositions, but to particular mental
habits.\textsuperscript{25} Strictly speaking, then, \textit{scientia} is not merely, or even primarily, an organised body
of knowledge, but rather an acquired habit of mind. Together, the intellectual habits perfect
the intellect, in much the same way that the moral habits perfect the will.\textsuperscript{26} While the
intellectual, moral and theological virtues have distinct domains they are nonetheless linked
by practical wisdom (\textit{phronesis, prudentia}), the possession of which is one of the defining
characteristics of the philosopher. In providing this role to wisdom, Aquinas is able to
conform to the classical model of the ultimate unity of the virtues.\textsuperscript{27} From the thirteenth
century to the sixteenth, this Thomist understanding of the philosophical quest, with its
powerful synthesis of classical and Christian elements, predominated.

The Renaissance witnessed a further modification of the models of the ancient sage and
scholastic philosopher—the magus. Most of the key elements of the previous philosophical
models were retained, but there was a new emphasis on the manipulation of nature. In \textit{De
occulta philosophia libri tres} (1531), Henry Cornelius Agrippa von Nettesheim provides a
typical description of the new type. Agrippa begins by affirming the Aristotelian division
of the sciences: ‘all regulative Philosophy is divided into Naturall, Mathematicall, and
Theologicall’.\textsuperscript{28} Later in the work he shows how these three faculties are related to the
virtues which are also ordered hierarchically to the end of personal transformation. It is
worth citing the relevant passage in full:

\begin{quote}
... we ought to labour in nothing more in this life, then that we degenerate not from
Excellency of the mind, by which we come nearest to God and put on the Divine Nature:
least at any time our mind waxing dull by vain idleness, should decline to the frailty of our
\end{quote}

\textsuperscript{25} Aquinas, \textit{ST} 1a. 89, 5; 1a2ae. 50, 4; 52, 2; 53, 1; \textit{SCG} I.61 (p. 130); \textit{SCG} II.60 (p. 156); \textit{SCG}
II.78 (p. 216); \textit{On the Virtues in General}, A. 7, Obj. 1.

\textsuperscript{26} Aquinas, \textit{ST} 1a. 82, 3; 1a2ae. 57, 1; \textit{Disputed Questions on Truth} III, Q 22, A. 11 OTC. 1 (p. 73).
Elsewhere Aquinas expands on this: ‘when, through the habit of wisdom there arises in our
intellect an idea of divine things, this very idea or inward word is wont to be called wisdom.’
\textit{SCG}, IV.xii (p. 59). One who has the habit of wisdom of knowledge is able to contemplate
without difficulty.’ \textit{ST} 2a2ae. 180, 7. The habit of wisdom perfects higher reason, the habit of
science perfects lower reason. \textit{Disputed Questions on Truth} II, Q. 17, A. 1 Body (p. 319).

\textsuperscript{27} Aquinas, \textit{ST} 1a2ae. 57, 4-6. Cf. \textit{ST} 1a2ae. 47-49, 51; \textit{Commentary on the Nicomachean Ethics},
Annas, \textit{The Morality of Happiness} (Oxford; Oxford University Press, 1993), pp. 73-84. For
accounts of the development of conceptions of practical wisdom to the time of William of
Ockham see Mary Ingham, ‘Practical Wisdom: Scotus’s Presentation of Prudence’ in \textit{John
Duns Scotus: Metaphysics and Ethics}, ed. L. Honnefelder, R. Wood and M. Dreyer (Leiden,
1996), pp. 551-571; Marilyn McCord Adams, ‘Scotus and Ockham on the Connection of the

\textsuperscript{28} Agrippa von Nettesheim, \textit{Three Books of Occult Philosophy} (London, 1651) I.i (p. 3).
earthly body and vices of the flesh: so we should loose it, as it were cast down by the dark cloud of perverse lusts. Wherefore we ought so to order our mind, that it by it self being mindfull of its own dignity and excellency, should always both Think, do and operate something worthy of it self; But the knowledge of the Divine science, doth only and very powerfully perform this for us. When we by the remembrance of its majesty being always busied in Divine studies do every moment contemplate Divine things, and by a sage and diligent inquisition, and by all the degrees of the creatures ascending even to the Archetype himself, do draw from him the infallible vertue of all things …. But the understanding of Divine things, purgeth the mind from errors, and rendreth it Divine, giveth infallible power to our works, and driveth far the doubts and obstacles of all evil spirits, and together subjects them to our commands.29

The three noteworthy elements of this description are these: contemplation of divine things is a mental exercise that brings the philosopher closer to God and confers godliness upon him; the investigation of the creatures is a part of this goal, inasmuch as the study of the inferior things leads inevitably to a contemplation of heavenly things; the state of contemplation purges the mind from error, and restores a dominion and ability to command that was lost at the Fall.30  This updated version of philosophical persona differs from traditional models only in its suggestion that wisdom is accompanied by the granting of power and dominion, and thus might be said to look forward to the emphasis of such early modern philosophers as Bacon and Descartes on the mastery of nature. However, there is no suggestion here that the dominion over things is to be exercised for the public good.

2. Reforming the Philosophical Persona

These standard models of the philosopher were not without critics, many of whom challenged the classifications of knowledge or the taxonomy of the virtues upon which they rested. Responding to Thomas’s appropriation of the Aristotelianism, a number of Franciscan theologians—most notably Duns Scotus (c. 1265—1308)—suggested that theology was not a speculative science, but a practical one, since its aim was to grow to love God.31  It would follow that theology ought to be classified with ethics, the other science

29 Agrippa, *Occult Philosophy*, Dedication to Book III, (pp. 341f.)
30 For more on the recovery of dominion see *Ibid.* III.40 (pp. 471f.)
whose goal was action rather than contemplation. William of Ockham (c. 1288—1347) was to go further, denying the theology was a science at all, at least in the Aristotelian sense. This would suggest a much more significant division between faith and reason than the hierarchical arrangement proposed by Aquinas. It would also follow that natural philosophy would be more independent of theology than in Aquinas’s scheme of things. Ockham did concede, however, that the mental disciplines involved in philosophy could help provide the theologian with the mental habits requisite for arriving at Christian wisdom.

Renaissance humanists also questioned various aspects of the traditional understanding of the philosophical quest, many of them addressing their criticisms directly to Aristotle. It was common to question Aristotle’s inclusion of prudence among the intellectual rather than the moral virtues. This, in turn, raised the question of the relationship between the moral and intellectual virtues. Was attainment of the former a prerequisite for the latter, or were moral and theoretical human ends distinct? Coluccio Salutati (1331—1406) and, after him, Sebastian Fox-Morcillo (1526/8—1560), argued that the search for truth would ultimately end in complete frustration rather than happiness, reasoning that it was simply not possible to understand the ultimate causes of things in the present life. Others pointed to the exclusive nature of the philosophical office, suggesting that it was unfortunate that ultimate goal of human life could be accomplished by so few. More prosaically, Felice Figliucci (c. 1524—c. 1590) complained, presumably on the basis of personal experience, that while contemplation might be the most sublime of human pastimes, it caused health problems, particularly in those prone to digestive disorders.

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34 Ibid., p. 337.
The application of the philosophical ideal to holders of political office was also challenged. Aquinas had defined ‘office’ in terms of the expression of particular virtues, and this applied no less to political offices: ‘To discharge well the office of a king is therefore a work of extraordinary virtue’.\textsuperscript{35} In the sixteenth century, Niccolò Machiavelli (1469—1527) was notoriously to argue that the discharging of one’s political office should not be thought as equivalent to ‘acting virtuously’. On the contrary, responsible conduct for one who assumes political office may well call for actions that lie well beyond the bounds of virtuous behaviour, traditionally understood. Machiavelli thus opened up the question of whether offices were related to the cultivation and expression of personal virtues or the attainment of specific social ends. Machiavelli’s preference for the latter was linked to his rejection of the contemplative ideal, which he shared with a number of Renaissance thinkers.

Not surprisingly, those who had found fault with the Aristotelian understanding of the virtues and their relations often had difficulty with the elevation of the life of contemplation. Discussions of the relative merits of the two lives frequently surfaced in the context of political philosophy.\textsuperscript{36} The rediscovery of Roman republicanism and the accompanying ideal of the participation of citizens in government necessitated a reassessment of the common devaluation of the active life. As early as the fifteenth century, Florentine Leonardi Bruni (c. 1369—1444) rejected the contemplative ideals of a previous generation of humanists, and stressed the need for all citizens to be actively involved in the affairs of the republic. In the second half of the century the pendulum swung back as supporters of the Medici suggested that the prince alone could vicariously discharge the civic duties of his subjects, freeing them for the \textit{vita contemplativa}.\textsuperscript{37} The founder of Florence’s Platonic Academy, Marsilio Ficino (1433—1499), personified this priority, excused as he was from mundane affairs on account of the generous sponsorship of the Medici. Subsequently, Machiavelli, who had a rather more complicated relationship with the Medici, would add another layer to the debate, identifying the Christian endorsement of monastic withdrawal from public life as major source of political instability.\textsuperscript{38}

The other great Italian republic, Venice, saw a parallel discussion, but one focused more on the university curriculum — specifically the ordo doctrinae and the officium of the philosopher.\(^{39}\) In the late sixteenth century, Padua was the official university of the Venetian Republic, and it was here that a major disagreement developed between the professors Francesco Piccolomini (1523-1607) and Jacopo Zabarella (1533—1589). The latter subscribed to the traditional view that the office of the philosopher calls for a purely contemplative natural philosophy. The active and operative disciplines—ethics, law, medicine, and mechanics—were regarded as distractions from the true philosophical life. Piccolomini, by way of contrast, insisted that active and contemplative lives could not be sundered, and that while the spiritual perfection of man did indeed lie in contemplative philosophy, the perfection of society required a philosophical engagement with civil science that could bring about a corresponding perfection of society.\(^{40}\)

More important for our present purposes were the criticisms of Machiavelli’s late contemporary, Martin Luther (1483—1546). This one time Augustinian monk was far less sanguine about the prospects of reconciling Christianity and pagan philosophy than his Dominican predecessor. The ‘Church of Thomas’, Luther insisted, was in reality the Church of Aristotle. This was not a good thing, Aristotle being a ‘liar and knave’, a ‘putrid philosopher’, the author of ‘unchristian, profane, meaningless babblings’ whom God had sent ‘as a plague upon us for our sins’.\(^{41}\) As could be expected from his general rejection of the Aristotelian contribution to Christian theology, Luther was strongly critical of Thomist claims about the ultimate convergence of the pagan philosophical quest and Christianity. A

\(^{39}\) Jacopo Zabarella defines *ordo doctrinae* as ‘an instrumental *habitas* through which we are prepared so to dispose the parts of each discipline that that discipline may be taught as well and as easily as possible.’ *Opera logica* col. 154, cited in Nicholas Jardine, ‘Keeping Order in the School of Padua’, in *Method and Order in the Renaissance Philosophy of Nature*, ed. Eckhard Kessler, Daniel Di Liscia and Charlotte Methuen (Aldershot, 1997), pp. 183-209 (p. 186).


particular point of contention was the Aristotelian-Thomist understanding of the virtues which, on Luther’s analysis, was responsible for the erroneous Scholastic teaching on merit. This was the view according to which one might gain genuine moral credit before God on account of the acquisition of the virtues and the performance of good deeds. A basic contention of the *Nicomachean Ethics* was that virtues are acquired as the result of continued practice—as Luther himself characterized it: ‘Aristotle taught that he who does much good will thereby become good.’ This was the very notion of *habitus*, which Thomas had uncritically accepted:

> Here Thomas errs in common with his followers and with Aristotle who say, ‘Practice makes perfect’: just a harp player becomes a good harp player through long practice, so these fools think that the virtues of love, chastity, and humility can be achieved through practice. It is not true.

The prevailing view of the gradual moral improvement of the individual on account of their own efforts—central to the classical conception of the philosophical persona—was rejected by Luther as inconsistent with the Pauline position that human beings cannot become righteous on account of their own activity. Being made right before God—the process of justification—is not an internal change in the person, but rather a change in their situation or status. Righteousness, Luther insisted, ‘is not in us in a formal sense, as Aristotle maintains, but is outside us….’ Such a view was summed up in Luther’s maxim *simul iustus et peccator*—simultaneously justified and a sinner. It followed, of course, that the knowledge of God *per se*, does not make the knower God-like or ‘deiform’ as Thomas had suggested.

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42 Luther, *Sermons of Martin Luther* VI, Sunday after Christmas, 6. Cf. Aquinas: ‘A human virtue is one “which renders a human act and man himself good” [*Ethic. ii, 6].’ ST 2a2ae. 58, 3. Cf. ST 1a2ae. 55, 3 & 4; ST 2a2ae. 58, 3. In Luther’s assessment, the *Nicomachean Ethics* was ‘the worst of all books.’ Luther, *Letter to the Christian Nobility* 25, in *Three Treatises*, p. 93.

43 Luther, *D. Martin Luthers Werke* (Weimar, 1883-1948), 39, 278, tr. in Paul Althaus, *The Theology of Martin Luther* (Philadelphia, 1966), p. 156, n. 71. For Aquinas’s explicit appropriation of the Aristotelian idea of habit, see Aquinas, *Commentary on the Nicomachean Ethics* I, Bk. 1, Lec. 20 Sct. 244 (p. 105). A similar Aristotelian view of merit was also promoted by some Humanist scholars. Thus, Francesco Piccolomini: ‘Since this is Aristotle’s position, he is to some extent in agreement with our theologians…. Merits, as they pertain to us, proceed from our virtuous actions, for faith alone is not sufficient….’ *A Comprehensive Philosophy of Morals*, in *Cambridge Translations of Renaissance Philosophical Texts*, 2 vols., ed. Jill Kraye (Cambridge, 1997), I, 74.

44 For Luther on the Aristotelian notion of *habitus* see Ebeling, *Luther*, pp. 150-8.


46 See Luther, *Lectures on Galatians*, LW 26, 232 and passim.
The position espoused by Luther lay at the core of the well-known Protestant doctrine of justification by grace through faith. This was the central theological issue of the Protestant Reformation and was opposed to the Catholic position, characterized by its opponents as a doctrine of justification through the performance of good works. The other major reformer, John Calvin (1509—1564), was in complete agreement with Luther on this issue:

There can be no doubt that Paul, when he treats of the Justification of man, confines himself to the one point—how man may ascertain that God is propitious to him? Here he does not remind us of a quality infused into us; on the contrary, making no mention of works, he tells us that righteousness must be sought without us.”

The general contours of the Reformation controversy about the nature of justification are well known and need not be further laboured here. It must be said, however, that little, if any attention has been paid to the ways in which criticisms of the Aristotelian-Thomist conception of virtue had an impact on the understanding of intellectual virtues such as scientia. Admittedly, the reformers had focused primarily on the moral and theological virtues. But it was inevitable that the intellectual virtues would suffer collateral damage, if for no other reason than that Aquinas had so carefully brought the three kinds of virtue together under the general superintendence of wisdom. The contentious mechanism of habit, moreover, was common to both moral and intellectual virtues. This threat to the unity of the virtues brought a need to re-evaluate the relations between the various sciences which, in the standard scholastic understanding, were closely linked with the different categories of virtues. In all of this, the conception of the Christian contemplative as exemplifying both classical and Christian philosophical ideals was no longer sustainable, at least for Protestants. As for the intellectual virtue scientia, in the developments outlined above we see the beginnings of a process in which ‘science’ ceases to be a mental habit and becomes something like the more familiar modern notion: a body of knowledge or set of practices


48 The theological virtues were, according to the Scholastic tradition, ‘infused’—a contention that also came in for considerable criticism. See Calvin, Tracts and Treatises, p. 247. Such criticism was not exclusive to the reformers. Thomas Hobbes, to take a single example, observed that the very notion of ‘infused virtue’ was an oxymoron. ‘... if it be false to say that virtue can be poured, or blown up and down, the words in-poured virtue, in-blown virtue, are as absurd and insignificant as a round quadrangle.’ Hobbes, Leviathan I.4.21/24 (Molesworth edn., p. 108).
aimed at bringing about a particular outcome.\textsuperscript{49} Science, like the reformers’ ‘righteousness’, also becomes something ‘outside us’ (Luther), ‘without us’ (Calvin). This reification of \textit{scientia} was the first step of a gradual process that saw the modern reconceptualization of natural philosophy as having to do with the observance of specified practices, rather than the cultivation of certain virtues. This trend is most conspicuous in those seventeenth-century figures influenced by Lutheran and Calvinistic thought.

Intimately related to the Reformers’ criticisms of Catholic-Aristotelian conceptions of moral progress and perfectibility, were their related views of vocation, the medieval ‘estates’, and the relative merits of the active and contemplative lives. Luther, for example, insisted on the importance of exercising an earthly vocation within the sinful realities of the present world. The Christian is warned against attempting to escape the evils of the world ‘by donning caps and creeping into a corner, or going into the wilderness’ as the papists do. Harking back to Augustine’s distinction between things that are to be loved for their own sake and things that are to be used, Luther asserted that the true Christian is to ‘use’ the world: ‘to build, to buy, the have dealings and hold intercourse with his fellows, to join them in all temporal affairs.’\textsuperscript{50} Against a common view that the imperative to work was God’s curse for Adam’s sin (Genesis 3.17-19), Luther insisted that ‘Man was created not for leisure, but for work, even in the state of innocence’. It followed that ‘the idle sort of life, such as that of monks and nuns, deserves to be condemned.’\textsuperscript{51} This view is explicitly opposed to a medieval supernaturalism that identifies the perfection of human nature with the contemplative life of the monastery.\textsuperscript{52}

Central to Luther’s criticism of the ‘idle’ life of the contemplative was a new conception of divine vocation. Throughout the middle ages the clergy occupied one of three ‘estates’, the other two being the aristocracy and the rest of the laity. The spiritual estate of the clergy was held to be superior to both of the temporal estates.\textsuperscript{53} Moreover, the clergy were considered to

\begin{footnotes}
\item[49] Charles Lohr captures something of this transition when he observes that: ‘Writers of the Reformed Confession broke with this [Aristotelian] conception. In their approach science was understood not as a habit but as a body of knowledge …’ ‘Metaphysics’, p. 632.
\item[51] See Albrecht Ritschl, \textit{Die christliche Lehre von der Rechtfertigung und Versöhnung} (Bonn, 1882-9), III, 308.
\end{footnotes}
be ontologically different from the laity, because their special status was confirmed sacramentally. Luther described this hierarchical arrangement as a ‘pure invention’, insisting that ‘all Christians are of the spiritual estate, and there is no difference among them except that of office’. In Protestant territories the clerical office thus came to be regarded as one calling amongst others. All vocations, on this view, were equally spiritual. This understanding of a priesthood of all believers informs the claims of some Protestant natural philosophers to be ‘priests of nature’.

Calvin followed Luther in condemning the notion that the clergy enjoyed a unique status. The erroneous assumption of the clerical estate was that ‘a more perfect rule of life can be devised than the common one committed by God to the whole church’. It is important to understand that Calvin’s criticism cut two ways. On the one hand, the clerical office was not inherently superior. On the other hand, the moral standard aspired to by clerics, and the monastic orders in particular, was affirmed as appropriate for everyone. Calvin thus sought to bring the spiritual life practised by the few into the mundane lives of all.

Calvin also held up the example of Adam in Eden as a standing reproach to the religious institutions of cloister and convent. Commenting on the fact that God had placed Adam in the Garden of Eden to ‘tend it and keep it’ (Genesis 2:15), he argued that ‘men were created to employ themselves in some work, and not to lie down in inactivity and idleness.’ Natural objects were there to be used and all men were enjoined to exercise ‘economy, and this

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57 Calvin, *Institutes* IV.xiii.11 (II, 1266).
diligence, with respect to those good things which God has given us to enjoy.\textsuperscript{58} Again, this active appropriation of material things was directly opposed to the monastic life. ‘Our present-day monks’, Calvin remarked, ‘find in idleness the chief part of their sanctity.’\textsuperscript{59} In all of this Calvin drew upon the authority of Augustine, insisting that for the Church father the monastic life was ‘an exercise and aid to those duties of piety enjoined upon all’ and that brotherly love was its ‘chief and almost its only rule.’\textsuperscript{60} Here he echoes Augustine’s insistence that contemplation must always be attended with love of neighbour.

The consecration of mundane work reappears in Calvin’s exegesis of the parable of the talents (Matthew 25:14-39, Luke 19:11-27)). Calvin argues that God bestows his gifts upon those whom he chooses—not, as the papists believed, according to individual merit. The recipients of God’s gifts have a duty to exercise them in the service of the common good:

\begin{quote}
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.\textsuperscript{61}
\end{quote}

Calvin never tires of pointing out that the earthly life should be directed towards ‘utility’, ‘profit’ and ‘advantage’, and that these accrue not to oneself, but to society.\textsuperscript{62} While Luther had mounted similar arguments, Calvin was even more strongly oriented towards the present world. He differed from the earlier reformer not only in his approval of trade and the charging of interest, but in his insistence on the need for the Christians to be actively engaged in useful worldly affairs so that society could be transformed and restored.\textsuperscript{63} While the sinful condition of the present world was permanent, it was not simply to be endured until the

\begin{footnotes}
\item[59] Calvin, \textit{Institutes} IV.xiii.10 (II, 1264). Whether Calvin was influenced by Augustine in his understanding of the ‘use’ of material things I have not been able to determine.
\end{footnotes}
advent of the world to come. Effort was to be expended in ameliorating the losses that had followed the Fall. This Calvinist conception of the sanctity of work and of its transformative affects have unmistakable echoes in Francis Bacon’s new conception of the vocation of the natural philosopher and in his ‘utilitarian’ justifications for a new scientific programme.

3. Francis Bacon and the Persona of the Natural Philosopher

While Francis Bacon has often been lauded as a seminal figure in the development of modern science, the centuries since his death have witnessed a protracted debate over the precise nature of his legacy. Certainly, he made no substantive contributions to science in the fashion of a Boyle or a Newton. The much-vaunted inductive method, in spite of the extravagant praise of prominent nineteenth-century figures, bears little resemblance to the way science has been conducted in any era. Indeed, in the pessimistic assessment of one commentator, ‘Bacon’s instauratio went to a dead end, as early as the first progress of science in the seventeenth century.’ What then, was the nature of Bacon’s achievement? One answer to this puzzle is that in Bacon’s work we encounter, in the words of Stephen Gaukroger, ‘the first systematic comprehensive attempt to transform the early modern philosopher from someone whose primary concern is with how to live morally into someone whose primary concern is with the understanding of and reshaping of natural processes.’ In sum, Bacon is the herald of a new philosophical persona.

How, then, does Bacon seek to revise the philosophical persona, and in what ways is it related to earlier Renaissance and Reformation critiques? First, it is clear that Bacon rejects the idea that philosophical knowledge is primarily to with contemplation that is removed from action and production: ‘as if 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… and not a rich store house, for the glory of the Creator and the relief of man’s estate.’ Elsewhere he insists that knowledge be sought not for ‘the quiet

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63 For differences between Luther and Calvin on these issues, see Ian Hart, ‘The Teaching of Luther and Calvin About Ordinary Work’, *Evangelical Quarterly* 67 (1995), 35-52, 121-135.
of resolution’ but for ‘a restitution and reinvesting (in great part) of man to the sovereignty and power … which he had in his first state of creation.’ Knowledge is thus to be pursued for the purposes of action and production. However this does not necessarily entail a preference for the active life over the contemplative. Rather, Bacon insists that contemplation should not be sundered from action. ‘If contemplation and action may be more nearly and straightly conjoined and united together than they have been’, this will ‘dignify and exalt knowledge.’ This insight is expressed in two of Bacon’s classic formulations: ‘the improvement of man’s mind and the improvement of his lot are one and the same thing’, and his contention that knowledge and power ‘meet in one’. In conformity with the tradition, he thus allows that ‘the contemplation of truth is a thing worthier and loftier than all utility and magnitude of works’, noting that ‘works themselves are of greater value as pledges of truth than as contributing to the comforts of life.’ The same point is made with a religious analogy: ‘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.’

As with the Protestant reformers, Bacon’s reading of the Genesis narrative is an important consideration in his understanding of the nature of the earthly vocation. In The Advancement of Learning, he explains how Adam was originally placed in the garden to work. His work consisted of contemplation, exercise and experiment. Following the Fall, however, a dichotomy arose between the active and contemplative lives, the two estates represented, respectively, by Cain and Abel. (In keeping with his acknowledgement of the importance of contemplation, Bacon makes the point that God’s favour fell upon the contemplative Abel.)

As is well known, a key element of Bacon’s conception of natural philosophy is that it

67 Bacon, Valerius Terminus, Works III, 222.
68 Bacon, Advancement, Works III, 294.
69 Bacon, Novum Organum, I, §3, Works IV, 47; Cf, I, §124, Works IV, 110. And elsewhere ‘assuredly the very contemplation of things, as they are … is itself more worthy than all the fruit of the inventions.’ I §129, Works IV, 115.
70 Bacon, Novum Organum, I, §124, Works IV, 110.
71 Bacon, Novum Organum, 1 §73, Works IV, 74. Mention of works may seem redolent of Pelagian or Catholic emphasis on works but Bacon’s emphasis was consistent with Protestant teaching. Thus Melanchthon’s Augsburg Confession—‘It is also taught among us that such faith should produce good fruits and good works….’ VI.1; and the Westminster Confession—‘good works, done in obedience to God’s commandments, are the fruits and evidences of a true and lively faith.’ XIV.ii. Both in Creeds of the Churches, ed. John Leith (Atlanta, 1982), pp. 69, 210
72 Bacon, Advancement, Works III, 296.
73 ‘To pass on: in the first event or occurrence after the fall of man, we see … an image of the two estates, the contemplative state and the active state, figured in the two persons of Abel and Cain.’ Advancement, Works III, 297.
restore, at least in part, what was lost to humanity as a result of the Fall. In keeping with this general vision of a restoration of prelapsarian conditions, Bacon urges the reuniting of the two forms of life in the practice of science. Bacon, then, does not take the side of proponents of the active life in the Renaissance debate, but rejects the terms of the question: neither the active nor the contemplative life, but both.

Bacon also challenges the exclusive nature of traditional philosophical vision. Science is not a rare virtue, attainable only by the talented few, but a body of knowledge. ‘The course I propose for the discovery of science’, Bacon announces, ‘is such as leaves little to the acuteness and strength of wits, but places all wits and understandings nearly on a level.’ With these words, Bacon sets out his philosophical equivalent of the Protestant priesthood of all believers. This approach to science, as one commentator has suggested, ‘is the epistemological mirror of men’s equality before God.’ As body of knowledge, rather than a virtue possessed only by exceptional minds, science can now also be augmented incrementally. The Baconian method thus calls for ‘progressive stages of certainty.’ What might be lost in terms of individual quality is compensated for by quantity—science ceases to be the purview of the elite individual and becomes the corporate activity of many. The ‘perfection of the sciences’ will come ‘not from the swiftness or ability of any one inquirer, but from a succession [of them].’ And what now guides the acquisition of knowledge is not a set of internalized mental habits formed by practice, but an objectively identifiable scientific regimen or method: ‘the whole way, from the very first perception of the senses must be laid out upon a sure plan.’ This publicly available method—and on this point the Baconian model differs from that of the Magus—can in principle be followed by anyone.

As for the benefits of science, these are no longer seen to as contributing to the moral perfection of the individual mind, but rather accrue to society. This social utility arises out

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74 ‘For man by the fall fell at the same time from his state of innocency and from his dominion over creation. Both of these losses however can even in this life be in some part repaired; the former by religion and faith, the latter by arts and sciences.’ Bacon, *Novum organum* II, §52, *Works* IV, 247
78 Bacon, *De sapientia veterum*, *Works* IV, 753.
79 Bacon, *Great Instauration*, *Works* IV, 18.
Bacon’s distinctive combination of contemplation and action. In order to make this point, Bacon draws on the Pauline maxim that ‘knowledge puffs up’, while ‘charity edifies’. The key virtue in the philosophical quest is thus not wisdom, but charity. On Bacon’s analysis, scholastic philosophy had succeeded only in producing ‘proud knowledge’ to the exclusion of charitable acts.\textsuperscript{81} The goal of science, the ‘legitimate end of learning’, was for Bacon ‘the glory of the creator and the relief of man’s estate.’\textsuperscript{82} In this reworked moral vision of the true end of philosophy, charity replaces wisdom as the key virtue. Charity is ‘the bond of perfection, because it comprehendeth and fasteneth all the virtues together’.\textsuperscript{83}

Bacon was also sceptical of the assumption of moral perfectibility present in both classical and, to a lesser extent, scholastic anthropology. The heathen, he complains, had ‘imagined a higher elevation of man’s nature than it is really capable of.’\textsuperscript{84} To the extent that the scholastics had adopted significant aspects of Aristotelian philosophy—including a relatively uncritical epistemology—they too had become unwitting heirs to an overoptimistic anthropology that had underestimated the difficulties in acquiring knowledge. Impediments to the acquisition of knowledge were taken seriously by the Protestant reformers, who attributed them to the fallen condition of the human race—a condition of which Pagan writers were unaware.\textsuperscript{85} On account of original sin the mind was disqualified from acquiring true knowledge. Calvin thus argued that the fallen mind ‘wanders through various errors and stumbles repeatedly’ and thus ‘betrays how incapable it is of seeking and finding truth.’\textsuperscript{86} Bacon agreed, contesting the Aristotelian/Thomist assumption that the mind is naturally oriented towards the acquisition of knowledge. ‘The human intellect left to its own course is not to be trusted’, he warned, and ‘the light of the sense’ is ‘uncertain’. Knowledge was to be ‘discharged of that venom which the serpent infused into it’.\textsuperscript{87}

\textsuperscript{81} I Corinthians 1.8 (Vulgate); Bacon, Valerius Terminus, Works III, 221f.
\textsuperscript{82} Bacon, Advancement, Works III, 294.
\textsuperscript{83} Bacon, Advancement, Works III, 442. Admittedly, Bacon also provides wisdom (‘sapience’) a unifying role, arguing that wisdom can unite Divine, natural, and human philosophy. Works III, 346; IV, 337.
\textsuperscript{84} Bacon, Works V, 5.
\textsuperscript{86} Calvin, Institutes, II.i.i.12 (I, 271). Cf. Commentary on Romans 1.21, Calvin’s Commentaries XIX, 72.
\textsuperscript{87} Bacon, Great Instauration, Works IV, 17, 18, 20.
It must be said that there remain significant elements of a moral program in Bacon’s natural philosophy, and he thus allows that the mind must be ‘purified and purged’. Yet, since discovery in the sciences was something that was ‘open to almost every man’s industry’, success ultimately did not depend solely, or even principally, on the virtues of the investigator. Rather, the key to success in the sciences lay in following a procedure or method. Bacon’s methodological prescriptions, then, render unnecessary the inner transformation of the philosopher. All that is now required is strict adherence to an externalized philosophical regimen. In a sense, then, what we see in Bacon are the beginnings of the separation of wisdom and science, and of transformation of the inner virtues of the philosopher into the outer methodological prescriptions of modern science.

Part of the burden of this paper has been to suggest that Bacon’s new conception of the philosophical enterprise was influenced by the Protestant reformers’ critique of scholastic and classical models of the philosopher and of a related Aristotelian conception of the virtues. If this were true, it might be expected that there would be differences between Bacon’s prescriptions and those of a Catholic natural philosopher such as Descartes. Indeed, Descartes provides what is perhaps the best contrast, and arguably his conception of the philosophical persona retains more elements of the conventional model than does Bacon’s. A brief comparison reveals some interesting differences. A number of commentators have drawn attention to similarities between Descartes’ Meditations and the traditional contemplative literature. Admittedly, some of these connections are overstated,
and in any case if the *Meditations* was intended to provide legitimacy for Descartes’ natural philosophical enterprise a degree of conformity to the existing models is to be expected. Nonetheless, Descartes does seem to have stronger affinities to the contemplative tradition than Bacon. The third Meditation, for example, contains a classic Thomist account of human ends in relation to contemplation: ‘the supreme happiness of the next life consists solely in the contemplation of the divine majesty, so experience tells us that this same contemplation, albeit much less perfect, enables us to know the greatest joy of which we are capable in this life.’ Descartes goes on to announce that the process of meditation proceeds from ‘contemplation of the true God, in whom all the treasures of wisdom and the sciences lie hidden … to the knowledge of other things.’

In a similar vein, the title originally proposed for the *Discourse* is suggestive of the transformative nature of philosophy. Descartes spoke here of ‘a universal science which is capable of raising our nature to its highest degree of perfection.’ The *Principles of Philosophy* begins by explaining that philosophy is the study of wisdom, and that those who follow Cartesian principles will ‘the highest degree of wisdom which constitutes the supreme good of human life.’ These assertions suggest a far more optimistic outlook than Bacon’s, implying that human knowledge can be perfected in the present life, perhaps by single individuals. Those who follow Cartesian principles will ‘discover many new truths’ and ‘may in time acquire a perfect knowledge of all philosophy, and reach the highest level of wisdom.’ The ‘democratic’ element of the Baconian method is also absent, for while the ‘intellectually backward’ may achieve wisdom ‘

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92 Descartes, *Meditations*, *CSM* II, 35.
95 Descartes, *Principles*, *CSM* I, I, 188. Similar expressions abound in Descartes writings: ‘true and certain knowledge’ *CSM* II, 48; ‘perfect knowledge’ *CSM* II, 49, *CSM* II, 111; ‘true knowledge’, *CSM* II, 101; ‘certain science’ *CSM* I, 197; ‘perfect knowledge of all things that mankind is capable of knowing’ *Principles*, *CSM* I, 179; ‘perfect scientific knowledge’ *Principles*, *CSM* I, 201; ‘the highest and most perfect science of material things which men can ever attain.’ ‘To Mersenne, 10 May 1632’, *CSMK* III, 38. On Descartes’ conception of certainty, however, see Desmond Clarke, ‘Descartes’ Philosophy of Science’, *Cambridge Companion to Descartes*, pp. 258-85.

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their lights’, they will be left far behind by those possessed of ‘the sharpest intelligence.’

The philosophical quest, moreover, remains the most excellent of human pursuits. Descartes does allow that philosophy brings public benefits: ‘a nation's civilization and refinement depends on the superiority of the philosophy which is practised there. Hence the greatest good that a state can enjoy is to possess true philosophers.’ This is partly because wisdom now extends not only to ‘the conduct of life’ but to ‘the preservation of health and the discovery of all manner of skills.’ Yet mastery of one’s own desires seems more important than mastery over nature. These brief considerations, while falling somewhat short of a conclusive demonstration of the significance of Protestant ideas on Bacon’s conception of philosophy, are at least consistent with the general thesis outlined in this paper.

**Conclusion**

In sum, the advent of modernity brought with it the beginnings of a divorce between morality and knowing, between wisdom and science, between *sapientia* and *scientia*. One of the factors that contributed to this divorce was the Protestant reformers’ doubts about the moral perfectibility of human beings, and the impossibility of ever achieving the goals of the traditional philosophical life. Given the inherent unreliability of human minds, the mental disciplines of the medieval contemplative were, in Bacon’s hands, externalized into a methodological regimen, the observance of which did not rely on the moral or intellectual excellence of the individual. In essence, then, in the methods of the modern sciences we see vestiges of the reified virtues of the early modern philosopher.

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97 Descartes, *Discourse*, CSM I, 123.
98 Descartes, *Principles*, CSM I, 180
100 Descartes, *Discourse*, CSM I, 123.